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On the Cover

FRONT: Phul man (semi-nomadic pastoralist tribe) walks across the Sahel, central Mali, West Africa. Photo © Carlton Ward Jr/LINC.

INSET: Desert Elephants of Gourma Elephant Reserve, Mali, West Africa. Photo © Carlton Ward Jr/LINC.

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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.

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EDITORIAL PERSPECTIVES

Different Voices in Wilderness Advocacy and Management

BY CHAD P. DAWSON

Multiple voices are crying out about wilderness preservation, and some may even have conflicting visions about what we are saving and for whom. Do we have tolerance for those other voices? Can we recognize the beliefs and practices of others as legitimate expressions of a wilderness ethic? Do we have the capacity to respect the point of view of others who believe that the wilderness movement needs to take this or that action or make a statement?

We all hold to our favorite and most moving quotes from wilderness visionaries of past and present. Those quotes and sayings have become our individual credo or mantra. Each of us has our own inspiration about wilderness and how to save it. Such mental, psychological, and spiritual imagery is a powerful reminder of the difficult and challenging task before us to ensure that present and future generations have wilderness to enjoy, cherish, and preserve.

One factor is clear—we will all strive to save what we value, and we all hold different values and value sets: social, economic, ethical, and ecological. If you want to explore the complexity of wilderness values and benefits, find and read through a new book called *The Multiple Values of Wilderness* edited and compiled by H. Ken Cordell, J. C. Bergstrom, and J. M. Bowker (Venture Publishing, 2005). See the book review in this issue of *IJW* for more details. You may come away with a different perspective on the complex and conflicting or complementary values held by different people.

Too often, we have let ourselves become divided about which values and whose benefits we are trying to maintain or maximize. Maybe it is time to see our collective values held in common as a starting point so that we may evolve back into more of a shared vision about wilderness preservation. This is not some idealist notion of unity and one voice, but rather of practical alliances, tolerance for differences, and a shared passion for protecting and preserving what we value in common—wilderness as a place and our experiences there.

In this issue, Rebecca Oreskes talks about taking the long view within the U.S. Forest Service to see the value of wilderness stewardship activities over time. Patricio Robles Gil tells the story of his groundbreaking work to designate the first wilderness area in Latin America. Articles by Seiser and Schuett and by Despain explore the potential for the designation of caves areas and environments as subsurface wilderness areas. Persons with disabilities using wilderness and the immediate and long-term benefits they receive are discussed by McAvoy and coauthors. Robert Baron relates some of the writing workshops and involvement by well-known wilderness authors from the 8th World Wilderness Congress. George Schaller presents a proposal for an international peace park to protect Marco Polo sheep in the Pamir Mountains. **IJW**

CHAD P. DAWSON is managing editor of *IJW*.

SOUL OF THE WILDERNESS

A Perspective on Wilderness, the Forest Service, and Taking the Long View

BY REBECCA ORESKES

My first "wilderness" experience probably began in Central Park when as a child I would take long walks with my father, looking at squirrels and picking mulberries—an activity that particularly horrified people who thought that any food product not bought in a supermarket must be inherently unsafe. My childhood imagination served as an endless wilderness landscape in which New York City slush would morph into first expeditions to Antarctica. In those days, I wasn't informed enough to realize that make-believe expeditions involving Scott were not the best side to be on.

Rebecca Oreskes hiking in Crows Pass in the Chugach National Forest of Alaska. Photo by Chad Dawson.

Later I realized there was a world and a landscape outside of city parks; that there might be places where one could hear nothing but birds and wind and water; where one could see a night sky filled with stars; places where people didn't occupy every corner or put their mark on every creature. And, of course, as I grew up I read Thoreau and cherished the idea—without fully understanding it—that "in wildness is the preservation of the world."

In adult years, I headed north and eventually found my way to a job with the U.S. Forest Service (USFS). Naturally, there was a little cultural readjustment that had to take place—but, nevertheless, after a few years I was getting paid to be a wilderness ranger. Of course, it didn't take long for the romance of the title and the reality of the job to meet in a violent clash. It's hard to be thinking of Thoreau, or Muir, or Abbey, or of anyone except a vengeful god when you're moving illegal campers, burying human waste, or doing any number of the other highly unglamorous tasks of a wilderness ranger.

As happened to many of us, my introduction to wilderness was a confusing jumble of wilderness versus nonwilderness policy; a wilderness plan that didn't make perfect sense to me; lots of people; a bad upper-level boss; and a general sense that I was hacking at the branches and not the roots of the management issues. I did all of this for lowly USFS GS-4 level wages and a seasonal appointment that began and ended with very little notice. I stuck with it because I loved the land.

Over the past 20 years I came in and out of wilderness work. I did other USFS jobs, gave up on the seasonal employment, and was very lucky to land a permanent job that now allows wilderness to be part of my responsibilities.

So what changes have I seen in 20 or so years? Of course, a lot has changed: We have more wilderness; we are more aware of broad-based ecological dilemmas and questions, if not their solutions. Examples of such include: what to do about invasive species, global climate change, and the role of people in nature? We have population and technology pressing in on and threatening our designated wilderness areas. The very foundation of the wilderness ideal of "human restraint" is tested not just by our insatiable appetites for using resources, but the spirit of wildness is often dialed and digitized away by technology such as cell phones and personal locator beacons. We have allowed ourselves to poke and prod and collar so much wildlife in the name of science that one wonders if animals—human or nonhuman—can ever be truly self-willed.

People Do Matter

Two years ago, I was at a conference in Big Sky, Montana, on science, technology, and public policy. I think I was the only person there who worked for a living in land management and stewardship, and I was more than a little out of my element. We ate all of our meals together, and I sat at a medium-sized table at lunch. One day I was in the middle of the table and trying to figure out whether to join the conversation to my left or my right. I had been listening on my right when I heard the word *wilderness* to my left and quickly swiveled my head to catch the conversation.

A very nice, thoughtful biologist from South Africa, with whom I'd struck up some conversation earlier in the week, was talking about wilderness in South Africa. He was talking about the role that people had played on the land for thousands of years, particularly in the context of fire, concluding his words with the pronouncement: "People have been an integral part of the landscape for ten thousand years—the idea of 'pristine' wilderness is a ridiculous idea."

As the words exited his mouth, he caught my eyes and quickly added, "No offense." Nodding with what I hoped was a thoughtful expression, I responded honestly: "No offense taken." But I went on to add, "I don't think the idea of wilderness is ridiculous. I do think that countries and people around the world need to figure out what wilderness is for them—and not, without thinking, apply the American model."

My point here is I believe people do matter. They mattered when the Wilderness Act was written, they matter now, and they will matter in the future. This is not easy for me to say—when I told you about expeditions in Central Park I didn't tell you that in those days my greatest goal in life was to be a hermit. I'm a lot like 90% of USFS employees, except that I've come around to realize that people aren't really so bad. Misguided, misinformed, and incomprehensible at times, but other than that—not really so bad. Maybe most of all, I've come to realize that whatever one's personal opinion on our human species—it doesn't matter. For better or worse, we're in charge and we're stuck with each other, so let's make the best of it.

In the past 20 years with the USFS, what's the same? Difficult and sometimes conflicting mandates; employees who have trouble making the bridge between multiple use and wilderness stewardship; too many people wanting too many things from the land; too few dollars; money that seems to evaporate before it hits the ground. Also, people in and outside of the agency who care from the depths of their being about wilderness and wild places.

What do I think has changed? I've seen what seems to me from my very limited historical perspective to be ever-increasing polarization in our ideas. There is no doubt a gap between many of us in wilderness management, and a gap between us and many wilderness advocates throughout the country. We may never agree on the role of humans in nature, or even on the smaller day-to-day management challenges we face, but I desperately hope we'll keep talking with one another.

I think we have outstanding people working in wilderness throughout the USFS and that they're commitment and their values are strong. I don't mean to say our employees have gotten better—but I do think that collectively we are more focused in our wilderness stewardship and on the task at hand.

In the last two years, perhaps the greatest organizational change is that the USFS now has a director of wilderness. As far as I can tell, this change was recommended by at least three Wilderness Advisory Groups (WAGs). There were lots of reasons not to make the change—fear of increasing Washington bureaucracy, fear that this would create a domino effect of increasing bureaucracy at regional and forest levels, fear of making wilderness stand out as a political target, and on and on. There were many compelling reasons to create the position. But the single most compelling reason that I heard and the one that most shaped my own thinking, was that USFS wilderness rangers and managers across the United States said they wanted it; they thought it was worth the risk and worth the money. To me it was a desperate cry for leadership—a cry that was eventually heard and a cry to which I have great faith that the USFS director of wilderness will respond, no matter who he or she is.

The Long View

In their book *Wilderness Ethics*, Guy and Laura Waterman (1993) wrote about the future of wilderness:

> We tend to a guarded optimism. Certainly we have overloaded the environment with our arrogant technologies. But nature is too resilient an antagonist to be easily vanquished. The natural world still has power, immensity, complexity, beauty beyond humanity's power either to create or to manipulate. What various kinds of wilderness have in common, whether mountain or ocean or polar ice or desert sands, is a vivid sense of both the overpowering strength and the delicate intricacy of nature. (page 34)

Despite everything, I too am guardedly optimistic about the future. If nothing else, optimism makes it much easier to get out of bed in the morning. Many of the problems we face today

related to wilderness are the same problems we have faced for 40 years; some of them have shifted or reformed, some have compounded, some have improved, but few are unique. They were here in varying degrees 40 years ago, and they will be here, in varying degrees, 40 years from now.

It's certainly not easy to imagine a rosy picture 40 years from now. There are lots of people everywhere, more and more of us clamoring for places to "get away from it all"; there's never enough money and there's never enough public support. Although some days it's discouraging to think we keep playing out the same issues over and over again, I take great comfort in knowing that many better men and women than I have wrestled with these issues. Collectively, we have struggled with criticisms and questions over the value or place of wilderness, and these struggles will continue. I think that's healthy—for the worst enemy of all is complacency.

I think the future of wilderness in the USFS and beyond continues to rest on three main ideas: restraint, protecting the spirit of wildness, and being open to new visions.

- **Restraint.** Can we find the discipline of restraint? Can we ever even agree on what it means? All of us can understand the general idea of restraint as it applies to wilderness—the belief that "self-willed" land is a valid and noble idea. But, we don't necessarily agree on where that restraint begins or ends—does wilderness restoration make any sense? How can we as stewards find the collective will to restrain our love of technology even when that technology is for a good cause such as monitoring wilderness conditions?

  We all know that wilderness is not an island unto itself, unaffected by political or environmental actions outside its borders—that the ultimate health of wilderness depends on the health of the world around it. Can we find the collective will to restrain ourselves outside of wilderness to keep the ecosystems from collapsing in on one another? I can't think of too many things more tragic than a country divided into suburbs and wilderness, yet more and more that seems a path we might travel.

- **The spirit of the land.** Guy and Laura Waterman (1993) noted that

  > "preserving the spirit of wildness requires action on at least two entirely distinguishable fronts. In the first place, the more obvious forms of destruction—industrialization, whether by miners or the recreation industry or second-home developers—must be fended off from significant blocs of natural lands. But after that, we must decide what we're preserving the land for: the preserved land must be treated with respect for its wild character, its internal integrity, the spirit of the land." (27)

  How do we protect the spirit of wildness in a world where instant communication is taken for granted, where cell phones and personal locator beacons and technologies still unknown change how we communicate? Who among us would have thought 15 years ago that today we'd be confronting the issues of instant communications, Internet cell phones, satellite phones, and personal radio beacons when considering what it means to experience wildness? In some cases, we've done an admirable job of physically protecting land, but we may have forgotten to ask what it means to respect the land's wild character. How do we honor the sprit of wildness when our lust for knowledge—but not necessarily wisdom—drives us to poke and prod every corner of the Earth for data?

  Twenty years ago I didn't hear much conversation about this within the Forest Service. But now, thanks to a lot of hard work by a lot of dedicated people, we're trying to figure out how to incorporate the idea of maintaining the spirit of wildness in our wilderness monitoring. What an exciting change!

- **New Visions.** Can we be open to new visions? Can we define new options, new ways of thinking that are not "either/or," that are not based on the premise that "you're either with us or against us?" Don't think that I'm asking for a deconstructed or neoreconstructed or a neodeconstructed view of wilderness—I'm not. I am asking us to be able to talk with my South African friend who said wilderness was a ridiculous idea. I'm asking us to figure out ways to keep the integrity of wild places without excluding entire human histories from the picture. Can we accept that people are not automatically the enemy of wild places? I think

Restraint, protecting the spirit of wildness, openness—that's what I think it will take to be able to sit together in celebration at the 80th anniversary of the Wilderness Act. I think it's possible, though not easy to get there.

the future depends on it. I think in the next 40 years there will be new models for wilderness outside of America, and that's a good thing.

The Future

Restraint, protecting the spirit of wildness, openness—that's what I think it will take to be able to sit together in celebration at the 80th anniversary of the Wilderness Act. I think it's possible, though not easy to get there.

Wherever you are in your life, the future has a nasty way of sneaking up on you. When I was chair of the Wilderness Advisory Group, I had the pleasure of getting to know Jerry Stokes, the former USFS assistant director for wilderness. I didn't know Jerry very well, but I knew him well enough to know he was a visionary and he was passionate about wilderness. Shortly after I joined the WAG, Jerry announced his retirement. He called me to tell me the news. I felt crushed and disappointed. Jerry told me that he looked to me—and a list of other folks that he believed in—to carry on, to fight for good wilderness stewardship. I hung up the phone after talking with Jerry, honestly thinking that he was nuts. That, at least in my case, I wasn't ready for any torch-passing to come my way; that I was ill-prepared, uninformed, and, if that wasn't enough, pretty much a nobody in the organizational food chain.

I realize now that Jerry was right. The future of wilderness stewardship in the USFS was and still is in my hands and in the hands of all USFS employees. More often than not the progress is slow. There always will be people who tell you what you want is impossible, or that what you're advocating is impractical and too idealistic. Those people can make an awful lot of noise, but we can't let them stop us.

Whether you've worked for the USFS or for a nongovernmental organization for 20 years, for three years, or 40 years, you may not always feel ready for the task; there will be good days and bad days, optimistic times and times everything we do feels hopeless. There will usually be many more small victories than big victories. The point is to do our best. To quote what I think may be from the Talmud, "We're not expected to finish our work, but neither are we excused from it." **IJW**

REFERENCES

Waterman, Guy and Laura. 1993. *Wilderness Ethics*, The Countryman Press, Woodstock, VT.

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buried resources. SAR events must include ongoing efforts to minimize impact to the cave and preserve wilderness values.

REFERENCES

D'Agostino, Jean. 1992. Defining underground wilderness: A proposed management plan for Lechuguilla Cave. Unpublished bachelor's thesis, University of California, Santa Barbara.

Despain, Joel D. 2004. *Hidden Beneath the Mountains, Caves of Sequoia and Kings Canyon National Parks*. Dayton, OH: Cave Books.

Krejca, Jean K. 2006. Draft inventory of karst fauna in Sequoia, Kings Canyon, and Yosemite National Parks. Buda, TX: Zara Environmental.

National Park Service. 2001. National Park Service Management Policies. Sections 6.3.1 and 6.3.11.2.Washington, DC: Department of the Interior.

Stock, Greg, Robert S. Anderson, and Robert C. Finkel. 2004. Pace of landscape evolution in the Sierra Nevada, California, revealed by cosmogenic dating of cave sediments. *Geology* 32(3): 193–96.

Tinsley, John C. 1999. New karst connection in Mineral King Valley. *California Caver* 210: 22.

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Defining the Concept of Cave Wilderness and Its Designation Values

BY PATRICIA E. SEISER and MICHAEL A. SCHUETT

Article co-authors Patricia E. Seiser and Michael A. Schuett.

Introduction

For some, caves are one of the last remaining frontiers for adventure, wilderness, and exploration in America. In acknowledgment of these qualities, a few have sought national recognition for caves in the form of a wilderness designation. However, their efforts have not resulted in any cave or portion thereof receiving congressional recognition as wilderness.

During the years that the Wilderness Act was under congressional consideration, numerous hearings were conducted. A report, submitted by de Saussure (1962), entitled "Cave Resources," as well as testimony by representatives of the National Speleological Society, was taken under review during preparation of the final draft of the Wilderness Act (Stitt 1982).

The Outdoor Recreation Resources Review Commission (ORRRC), in its 1962 Study Report No. 3 noted the potential wilderness value of caves:

> Rivers and caves are considered in the report as important potential wilderness resources, and we have attempted a limited inventory of wilderness rivers and discussion of cave preservation in appendixes to the full report. It is apparent that special study is needed to develop suitable definitions for these recreation resources, which can be applied in survey and management efforts. (ORRRC, 1962, p. 4)

In the end, the Wilderness Act of 1964 made no reference to caves. However, cave conservationists felt that Congress was aware of caves' potential as wilderness and had intended to include them, just as other natural features were included without specific reference (Stitt 1982).

Attempts were made to designate caves or portions of caves as wilderness (Stitt 1991). Yet no federally designated wilderness has been established based on the wilderness qualities inherent to the caves found there. Nor has the presence of caves been an important criterion in the determination of any wilderness designation (Seiser 2003). This lack of designation suggests that cave wilderness is not an intuitive concept, at least not in the context of the Wilderness Act.

The lack of understanding, by the general public and policy makers, of caves' ecological importance and associated wilderness values may play a role in the lack of a designation. Congressional testimony and other records indicate that values were a critical focal point in the passage of the Wilderness Act of 1964 (Cordell et al. 2003). Developing an understanding of values associated with caves may lead to better understanding of cave wilderness and the need for a congressionally legislated designation.

Justifications for wilderness preservation arise from values ascribed to wilderness. McCloskey (1990) defines these values as reasons, based in philosophy and culture, for wanting wilderness. These tangible and intangible values are attributed to the benefits experienced by individuals, society, or nature. Various wilderness- and protected areas–related value typologies have been developed. Two specific typologies

address American and worldwide perspectives. A 13-item Wilderness Values Scale (WVS) has been used, as part of the American National Survey on Recreation and the Environment, see table 3 Cordell et al. 2003; Cordell et al. 1998). The World Commission on Protected Areas (WCPA), a voluntary technical body of the IUCN, developed a typology of intangible values most commonly associated with protected areas, see table 1 (Putney 2003). These typologies have contributed to the understanding of the diverse values associated with protected areas, both nationally and internationally. The work of Cordell et al. (2003) highlights the change, over time, in the relative importance of specific values associated with wilderness in the United States.

In a 1961 Cave Research Foundation Report, Smith (1981) wrote, "The application of wilderness philosophy to caverns is neither a well defined nor a widely thought about concept. It is not an easy concept to develop for speleological wilderness values are alien to much of the human experience." Other authors have discussed values associated with both caves and wilderness (Gamble 1981; Huppert and Wheeler 1992; Watson and Smith 1971). The intrinsic values of caves make it evident that many caves do meet the criteria for a wilderness site (Huppert and Wheeler 1992). However, there has been little to no research identifying which values are associated with the creation of a designation such as cave wilderness.

Much of the research on cave wilderness was confined to the legal definition of wilderness (Seiser 2003). Several definitions for cave wilderness have been proposed, most are grounded in the Wilderness Act, and none has gained wide acceptance (see table 1). The lack of a federally designated cave wilderness may lie in the lack of a clear definition for cave wilderness, defining both intent and purpose of such a designation, as well as predication of the definition of cave wilderness on the 1964 Wilderness Act.

Table 1. Cave Wilderness Definitions

Author	Year	Definition
Watson & Smith	1971	Underground wilderness consists of cave systems that generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable.
Stitt & Bishop	1972	Underground wilderness is that portion of a cave or karst area, lying below the surface of the earth, which meets the requirements of the Wilderness Act regarding value and impact on the observer.
Gamble	1981	Areas from which Man can derive the wilderness experience exists in the remote areas of cavern systems, where the impact of Man's activities is largely unnoticeable. Any cave or portion thereof, which has not been markedly disturbed by tourism or other exploitive activities, therefore includes substantial tracts of wilderness.
Wood	1983	[Cave] Wilderness is an area that can provide people with wilderness experience. The primary purpose of wilderness is recreational and cultural with ecological values important but secondary. Wilderness experience consists of feelings of freedom, beauty, empathy with wild nature, and remoteness from the ordinary works of man.
Millar	1994	Cave wilderness is a function of the difficulty of ingress/egress, travel within the cave and/or the feeling of remoteness from the surface.

The purpose of this study was to explore values and meanings associated with cave wilderness from the perspective of stakeholders who perceive their lives to be affected by caves and/or a cave wilderness designation. The study examined stakeholder expectations of and concerns regarding a special cave designation, such as cave wilderness. In establishing the foundations of meaning for a phenomenon, it becomes possible to construct sound scientific and political theories, management practices, and policy. The defining of a concept, such as cave wilderness, is a way to enhance the knowledge base for the discipline of cave resources stewardship (Parse 1997).

Study Design

Cave regions of central Kentucky and southeast New Mexico were selected as study sites for a phenomenological investigation of cave-related stakeholders, using a focus group format.

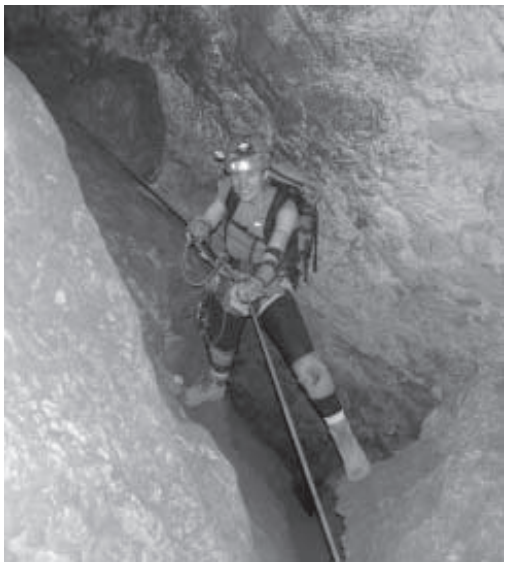

Figure 1. Hazel Barton crossing a "pit" in a cave while on belay. Photo by Patricia E. Seiser.

Focus group dynamics can stimulate discussions and encourage in-depth articulation of concerns, attitudes, and perceptions, thus providing insights into the research topic (Fleitas 1998). Discussion topics covered meanings and values associated with cave wilderness, need for a congressional wilderness designation, and perceived benefits and risks associated with a cave wilderness designation.

Table 2. Community of Interest and Community of Place Stakeholders

Defining Stakeholders by Community of Interest and Community of Place

Community of Interest (Those who use and/or participate in the stewardship of caves and karst.)
1. Individuals who utilize caves for recreation, exploration, and/or research.
2. Individuals who own or manage wild or developed caves (regardless of ownership or commercial use).
3. State and federal government officials responsible for decisions impacting caves or cave management.
4. Special interest organizations that have an interest in cave and karst environments.
Community of Place (Those who work, reside on, or own land in cave and karst regions.)
1. Local individuals who earn a living via a nonresource extraction business.
2. Local individuals who earn a living via a natural resource extraction industry.
3. Local government officials who may have an impact on cave stewardship activities.
4. Local residents

Both study sites contain a national "cave" park: Mammoth Cave and Carlsbad Caverns National Parks. Attempts to establish cave wilderness have occurred at both parks.

These cave regions differ culturally, historically, and economically, and in terms of regional population, land ownership, and designated wilderness. They differ in mechanism of cavern development, nature of the caves, and in how their relation to the surface landscape may affect individual awareness of caves. These distinctly different regions provided a wide range of experiences and values from which stakeholders drew upon in discussing their perspectives of caves and a special cave designation, such as cave wilderness.

Participants were recruited based on membership in selected target populations—stakeholders who may effect or be affected by cave stewardship policies and legislation. Cave-related stakeholders fell into one of two, potentially overlapping, communities—the community of interest and the community of place (see table 2).

Nine focus groups were conducted, involving 60 participants. Four focus groups were held during a national caving event (39 participants had caved in one or both study regions). Five focus groups were held within the specific study sites (21 participants), three in Kentucky, and two in New Mexico. Effective focus groups comprise six to eight participants (Krueger 1995). In this study focus group sizes ranged from two to 12. Variations in group numbers resulted from participants failing to attend or the inclusion of individuals invited by participants.

In addition to focus group participation, stakeholders were asked to complete a questionnaire with questions about demographics, caving experiences, and wilderness visitation.

Focus group sessions were taped using video and audio recorders. Transcripts of recordings were first coded by the researcher to identify themes, reviewed by the research assistant, and then evaluated by two independent, noncaver reviewers. Identified themes and concepts that appear to link substantial portions of the data together served as a basis for a developing narrative (Winter, Palucki, and Burkhardt 1999; Fleitas 1998).

Findings and Discussion

It is beyond the scope of this article to report on all findings of this research. The intent of this article is to identify values associated with the establishment of a special designation such as cave wilderness based on themes identified from focus groups discussions. The article also presents goals and objectives of a cave wilderness designation as derived from focus group discussions. The research revealed a need for a clearly delineated definition of cave wilderness, and a purposed definition is developed, based on special designation values, goals, and objectives, resulting from focus group discussions.

The sociodemographic profile of focus group participants was as follows: predominately white (98%), male (78%), between the ages of 40 and 69 (77%), had a bachelor's degree or higher (74%), had an annual income of US$40,000 or higher (72%), had visited a wilderness site (90%), and identified themselves as a caver (76%). Caving experience levels ranged from novice to very experienced to retired. They also indicated wide-ranging specializations (explorer, photographer, cave diver, etc.) (Seiser 2003).

Designation Values

Seven value-related themes were identified regarding a special cave designation, such as cave wilderness: (1) research and monitoring, (2) experiential, (3) resource protection, (4) educational, (5) future, (6) significance, and (7) existence. Themes often overlapped. All groups discussed the first four themes to varying degrees. Seven groups directly or indirectly addressed educational and future value themes. Only two groups discussed existence value.

- **Research and Monitoring:** Discussions on the intent of a special designation centered on protecting

physical and social scientific values and resources. This included establishment of baseline data for monitoring purposes. The preservation of future discoveries was an important component of scientific research. The value of research and monitoring is illustrated in this stakeholder comment:

> Who cares that they're the last unexplored frontier, because of that we don't know enough about them. This is an opportunity to go into an environment that we have not impacted on our planet and study ecosystems that are undamaged. We've never really had an opportunity to do that before and now we have the tools to do it, and we are getting so much information from those environments… So, the scientific potential is vast for these areas, what we can learn. For most people, if you say the cave needs to be protected, it's very delicate, we have these formations, we have these complex ecosystems, they're not going to get that, but when you say it's this incredible scientific resource, which it really is, then they're like oh science well that's important please do that.

- **Experiential:** Preservation of the experiential aspect of wilderness was another important component of a special designation. Such an experience offers the perceptions of solitude, remoteness, and self-sufficiency. This value is aptly discussed by this stakeholder comment:

> If I'm in Fairy Cave and I'm way back in the most miserable part of Fairy Cave, which is still like an hour from the entrance, I don't feel like I am in the wilderness; I am in a wild cave there, but I'm not in wilderness. When I'm in Lech and I'm like four or five hours from the entrance, and we're camping down there, I absolutely do feel like we're in the wilderness. I think, for me, it's how far am I from the infrastructure of "somebody else can take care of me," when I feel like I'm getting away from, that is when I feel like I'm in the wilderness. Maybe it's the same for Joe Blow public, at what point does he cross the boundary where it's like, oh my goodness I'm taking care of myself now? This is wilderness.

- **Resource Protection:** Resource protection discussions ranged from broad statements, such as "good for the health of the planet," to more specific benefits, including protection of water quality and protection of fauna. Protection included the physical aspects of a cave—preservation of the cave's natural state and its original resources, and recognition of resource fragility. The following stakeholder comment discusses the value of resource protection:

> You know if you get a pass to go into what I would deem as a cave wilderness area, it just takes one person to go in there and take what he wants and that piece is nonrenewable. … But, there is more chance of renewability on the surface, … because in caves there's virtually no chance.

- **Educational:** Focus groups discussed the importance of a special designation in generating public awareness of the significance of caves. Specially designated caves can serve as educational resources for land managers and the public (with or without visitation). The educational value is best illustrated by this stakeholder comment:

> If we go through the process of trying to pursue some kind of designation, it should be for the purpose of creating broader community outreach and a broader forum for education about caves and karst, obviously for the protection of caves and karst. But in order to protect you've got to educate. So, the education aspect of any kind of designation would just be paramount.

Figure 2. Pat Kambesis recording research notes while exploring a cave. Photo by Patricia E. Seiser.

- **Future:** Discussions focused on the need to protect caves based on not only today's knowledge and values, but also on the preservation of cave resources for future generations' needs and values. Preservation would also protect the potential for future discoveries, as noted in the following stakeholder comment:

> Why do you want to preserve this, is it for current scientific study, is it for future scientific study? Let's not exhaust all of the resources. With science, we may discover in a hundred years, we may find that science in 2002 was just in its infancy. Let's do what we need to do to learn to as much as we can about what's beneath us and leave it in such a way so that two generations hence they won't say, oh you've wiped out the footprints.

- **Significance:** Discussions touched upon the need for the designation to be based on the overall quality of the resource to be protected, as opposed to one or two resource attributes (including scientific, aesthetic, and other intangible attributes). The following stakeholder comment discusses significance:

> There has to be some value criteria in there too. It's got to be an outstanding example of

Table 3. Protected Areas Value Typologies

Value Typologies		
Cave Wilderness Designation Values (2003)[1]	WCPA (2003) Intangible Values of Protected Areas[2]	NSRE (2000) Wilderness Values Scale[3]
Experiential		
Research & Monitoring	Research & Monitoring	Scientific Study
Existence	Existence	Knowing It Exists
Educational	Educational	
Future		Option for Future Generations
Resource Protection		
Protecting Water Quality		Protecting Water Quality
Protecting Air Quality		Protecting Air Quality
Protecting Wildlife Habitat		Protecting Wildlife Habitat
Preserving Unique Wild Plants & Animals		Preserving Unique Wild Plants &
Protecting Rare & Endangered Species		Protecting Rare & Endangered Species
	Recreational	Recreation Opportunities
	Aesthetic	Scenic Beauty
	Spiritual	Spiritual Inspiration
	Cultural	
	Therapeutic	
	Identity	
	Artistic	
	Peace	
		Tourism Income
		Option for Personal Use

[1] As Identified in this article.
[2] See Putney (2003).
[3] See Cordell et al. (2003).

> something. Outstanding resources, outstanding geological speleothems, hydrology for the local area, whatever it is, you can't just take any little feature… it's got be of great value, significance.

- **Existence:** Two groups mentioned the value of knowing that wilderness existed even without actual visitation, as illustrated by the following comment: "There's a lot of wilderness areas that I don't get any selfish thing from personally, but I feel good knowing that there are places out there that humans aren't [messing] up."

Designation Values Discussion

With one exception, focus group values associated with a special designation such as cave wilderness were similar to those of the WCPA Intangible Values Typology (Putney 2003) and the Wilderness Values Scale (Cordell et al. 2003; Cordell et al. 1998) (see table 3), indicating that these values are not dissimilar from those associated with other types of protected areas. The one exception was experiential value. The WCPA typology covers a wide variety of protected areas, and it is understandable that experiential value would not be a primary value of all sites. Perhaps it is not included in the WVS typology because the perceptions of solitude, remoteness, and self-sufficiency are integral components of wilderness.

Focus groups indicated difficulty with use of the phrase *cave wilderness*. Two primary reasons were (1) negative experiences associated with wilderness hearings and establishment of wilderness, and (2) the concern that such a designation would serve as an attractant, resulting in the destruction of the resources intended to be protected. Such concerns may be why emphasis was placed on the experiential value by all focus groups. If a special designation did not use the term *wilderness*, it was still to protect the experience of wilderness.

Scientific research was a primary component of focus group discussions, indicating the importance of research and monitoring values to a special cave designation. This runs contrary to recent research indicating that scientific value was not a significant aspect of wilderness (Brown and Alessa 2005; Cordell et al 2003). In the case of this study, scientific value is significant to the establishment of cave wilderness.

Five of the nine focus groups discussed recreation, specifically noting that cave wilderness should not be established for recreational purposes, as illustrated by the following stakeholder comment: "It's not for recreational use; it's for exploratory and documenting." Although it can be argued that cave explorers are recreating while they are mapping and inventorying a cave, they are producing scientific documents. It is questionable if cave visitors, whose primary interest in caves is for sport/adventure, would feel the same way about a nonrecreation based wilderness designation.

Values not identified in focus group discussions on cave wilderness, yet listed in the two the WCPA and WVS typologies, should not be considered as unimportant to focus group participants. Rather, these values are not significant in the establishment of a special cave designation. As noted by Harmon, 2003, "No single protected area can cover the spectrum of intangible values" (p. 20). It is highly likely that additional values will be associated with cave wilderness once a designation is established. Understanding the values associated with a special designation begins to lay the foundation of cave wilderness. Such

knowledge will aid in answering the question; "What is cave wilderness?"

> Are we talking about people? Are we talking about places? And if we're talking about preserving caves, are we talking about preserving them for their own sakes or preserving them because they are of value to humanity?

Designation Goals and Objectives

As noted previously, cave wilderness is not an intuitive concept. Understanding the values associated with a special cave designation is critical to understanding cave wilderness. So too is an understanding of what the intentions are in such a designation. Understanding the purposes a cave wilderness designation would serve is an important aspect of defining what cave wilderness is to be.

Research findings suggest the following goals are important in defining the intent of a special designation such as cave wilderness: (1) protection of cave resources and associated scientific values that occur within a wilderness setting for present and future research opportunities, and (2) protection of the wilderness experience. The sense of isolation, as defined by solitude and remoteness, and the sense of self-sufficiency are important elements in a cave wilderness experience.

Based on these goals, it was possible to develop objectives of a special cave designation. These objectives included: (1) intent, (2) visionary impact, (3) scientific values, (4) experiential values, (5) access issues, (6) resource protection, and (7) educational values (see table 4). As one participant noted:

> …research to understand our resources and how they interact with other resources, from taking that information and data and using that to educate not just the public, but to educate our land managers. … I think research is an important part of the whole protection, because if you don't truly understand how something works then how are you going to come up with the most effective ways to help protect, and preserve, and manage those resources?

Table 4. Criteria Important in Defining the Idea of Cave Wilderness.

Criteria Important in Defining the Idea of Wilderness as Established by Focus Groups	
Intent	Is the designation for resource protection or recreation and knowledge? It is necessary to define what is being protected and from what activities or events. Cave wilderness should not be established primarily for recreational purposes.
Visionary Impact	Designation must protect caves based on today's knowledge and values and preserve caves and cave resources for future generations' needs and values.
Scientific Values	Designation must provide protection of the cave's scientific values and resources, for study now and in the future, including preservation of future discovery opportunities.
Experiential Values	Designation must provide for the protection of individuals' ability to have a wilderness experience that offers the perceptions of solitude, remoteness, and self-sufficiency.
Access	Access restrictions should occur for the protection of the cave resources, but should not result in permanent closure of the cave. Rationales for limiting access include the existence of other caves open for recreational purposes and the ability to provide alternative ways to experience the cave via the use of photographic and videographic imagery.
Resource Protection	Designation will need to provide protection for physical, biological, and other components of a cave, preservation of the cave's natural state, its original resources, and recognition of resource fragility. The designation will address surface as well as subsurface activities that may impact upon the cave resources. It will also need to provide protection for the human dimension aspect of a cave—protection of physical and social sciences' values, aesthetic values, wilderness values, and other values.
Education	Specially designated caves can serve as educational resources (with or without requiring physical visitation), generating public awareness of the significance of caves.
Management	Designation must recognize that each cave is different. It would be necessary to tailor management practices to meet specific cave needs. Specific management should evolve from cave resources (physical and social sciences) and skill requirements.

The objectives delineate cave wilderness stewardship goals without placing specific restrictions or requirements on how they are to be achieved, thus allowing each designated site to be managed as appropriate to protect the values and resources for which it was designated.

Defining Cave Wilderness

In developing the definition of cave wilderness, a combination of two approaches was used. The traditional approach was used to identify values and meanings associated with the concept via focus groups. The second approach, concept inventing, results from the interpretation of literature from various disciplines, personal experience, and other sources in order

to discover associated meanings. The scholar selects which meanings to use in the definition and distinguishes the concept via a logical combination of these chosen meanings (Parse 1997). In the first approach, the structure of the concept is generated from the research participants. In the second approach, the ideas arise from multiple sources (Bournes 2000).

In defining cave wilderness, the research findings were complemented with the researcher's personal experiences, reflections on wilderness and cave wilderness literature, and from existing U.S. federal legislation: the Wilderness Act of 1964, the Wild and Scenic Rivers Act of 1968, the Federal Cave Resources Protection Act of 1988, and the Lechuguilla Cave Resources Protection Act of 1993. Thus, values and meanings of the concept of cave wilderness developed from research participant inputs, as well as emanating from a synthesis of multiple sources.

The proposed definition of cave wilderness is also guided by an added component—the idea of exploration and discovery. Kerbo and Roth (1989) note that caves not only emphasize wilderness qualities and benefits, they also allow individuals to experience the spirit of exploration and adventure. Although alluded to in discussions regarding exploration and mapping and other scientific activities, explicit expression of this idea by research participants as a specific value of cave wilderness did not occur. The idea that exploration and discovery be part of the wilderness experience is not a new one. Believing that the urge to explore was basic to human nature, Aldo Leopold felt that designated wilderness would provide opportunities to safeguard the romance of exploration (Sutter 2002). "And now, speaking geographically, the end of the unknown is at hand. … Is it to be expected that it shall be lost from human experience without something likewise being lost from human character?" (Leopold 1991, p. 124). In combining the possibility of adventure and wilderness preservation, Leopold envisioned the potential to prevent the loss of the idea of exploration from the average person's life.

In defining cave wilderness, consideration is given to the physical resources of the cave, its wilderness qualities, and stewardship goals. A definition should recognize that humans have a past, present, and future history with caves, and recognize that scientific ventures can be intertwined with a wilderness experience.

The following preamble and definition of cave wilderness are proposed herein:

> Caves are valuable, nonrenewable resources. Wilderness caves and other significant wild caves exist and are protected to preserve their recreational and educational values for the perpetual use, enjoyment, and benefit of all people. There exist some caves and cave passages that are repositories of scientific and cultural resources of extraordinary value, known and unknown. These same caves and cave passages exhibit high degrees of wildness and naturalness (the physical reality of wilderness) and the intangible essence of wilderness (solitude, self-sufficiency, and sense of remoteness) such that visitation evokes a wilderness experience. In order to protect these scientific and cultural resources, wilderness qualities, and opportunities for discovery, it is proposed that the designation of cave wilderness be established. In recognition of the spirit of exploration and discovery, cave wilderness shall be open to those who desire to meet the cave on its own terms, to explore, discover, and report, thereby contributing to the world's knowledge of speleology and other sciences. It is the hope that use of such knowledge will be for education, resource stewardship, and other additional beneficial purposes for all of humankind.
>
> Cave wilderness is defined as those caves and cave passages exhibiting exceptional scientific and cultural resources, and wilderness qualities. These sites display a high degree of wildness, in which the physical structure and ecological systems are largely unimpacted by humans and in which there is a sense of remoteness from the ordinary activities and works of humankind. Cave wilderness is to mean those caves and cave passages in which stewardship shall protect the cave resources, its wilderness values, and future discoveries. Stewardship goals include: sanction of exploration and other scientific research activities, while seeking to limit the impact of these activities and other visitation; protection of the sense of solitude, remoteness, and self-sufficiency as well as other characteristics of a wilderness experience; recognition of the historic connection of humans and caves, such that evidence of historic human visitation and usage that

The lack of understanding, by the general public and policy makers, of caves' ecological importance and associated wilderness values may play a role in the lack of a designation.

does not detract from the cave's wildness or wilderness experience is acceptable; and management of surface activities to protect the cave resources and wilderness qualities.

The preceding preamble and definition is based on themes identified from discussion groups conducted in two cave regions of the United States. The following two questions arise: (1) Would the same themes be identified from focus groups conducted in other regions of the United States? and (2) Are there issues and concerns not addressed by the focus groups in our study? Additional research would aid in determining the nation's level of interest in a cave wilderness designation. It would also provide an opportunity to evaluate the level of understanding and interest in cave stewardship, as well as determining cave-related educational needs.

Conclusions

This study identified values associated with the establishment of a special designation such as cave wilderness. Hendee and Dawson (2001) noted that in the future, wilderness may represent remnants of ecosystems, wild conditions, and opportunities for wilderness experiences, and is reflective of our stewardship of today. Threats to existing wilderness sites are similar to those faced in the stewardship of caves. The identified values associated with cave wilderness can guide today's stewardship practices to protect these nonrenewable environments. They can also be used to help identify caves on federal lands that deserve special designation (be it called wilderness or by another name) and the protection associated with such a designation.

Research and education were identified as integral components of cave wilderness stewardship. Although this

Figure 3. Reviewing research notes at the end of a day of exploring and surveying. Photo by Patricia E. Seiser.

provides opportunities for researchers to pursue cave and karst investigations, there still exists the obligation of protecting the cave resources and wilderness experiences while managing research activities. Public education may require the expansion of current educational programs and the development of new programs.

For some, the word *wilderness* is troubling. Nevertheless, whether a special cave designation goes by a convoluted title such as "site of extraordinary interest for speleological exploration and research" or other verbiage, the heart of the designation is still to protect the wilderness of caves and their associated values.

A special cave designation should require both surface and subsurface lands be considered, as well as associated activities, to address the multidimensional aspect of cave boundaries. It does not require that the surface lands meet wilderness qualifications, only that activities occurring on the surface do not adversely affect the subsurface cave wilderness.

Whereas this research needs to be expanded to other cave and noncave regions of the United States for further validation, it is a beginning for laying the foundation for cave wilderness. There is also a need to understand the public's knowledge of and perceptions regarding caves and caving activities, including exploration.

An understanding of the values associated with a special cave designation, as well as a clear definition of cave wilderness, may aid in legislators' and the public's appreciation for the need of a congressionally legislated special cave designation.

This study emphasizes the need to expand the concept of wilderness to include nontraditional wildernesses such as caves, and the idea that wilderness can be managed with an emphasis on science, education, and exploration, instead of recreation. This study lays the foundation for cave wilderness stewardship and aids in expanding the concept of wilderness. The proposed definition of cave wilderness provides a framework upon which to base cave ecosystem management practices and policies.

In 2005 U.S. Senate Bill 1170 was introduced to Congress proposing to establish the Fort Stanton-Snowy River National Cave Conservation Area, located on Bureau of Land Management land near

Capitan, New Mexico, "to secure, protect, and conserve subterranean natural and unique features and environs for scientific, educational, and other appropriate public uses" (S.1170, June 6, 2005). The nature of Fort Stanton cave and its long history of recreational visitation do not lend much of the currently known cave to wilderness consideration. Of the eight criteria defining the idea of cave wilderness, the bill specifically addressed six, lacking the criteria of "visionary impact" and "experiential values." Although the bill seeks to establish protected status for a specific cave and does not specifically establish a federal land management category, it does not preclude that use.

The significance of the bill lies in the potential establishment of a designation for the protection of scientifically notable caves, regardless of their wilderness values. This could be the first step toward the establishment of a cave wilderness–based designation. **IJW**

REFERENCES

Brown, G. C., and L. Alessa. 2005. A GIS-based inductive study of wilderness values. *IJW* 11(1): 14–18.

Bournes, D. A. 2000. Concept inventing: A process for creating a unitary definition of having courage. *Nursing Science Quarterly* 13: 143–49.

Cordell, H. K., M. A. Tarrant, and G. T. Green. 2003. Is the public viewpoint of wilderness shifting? *IJW* 9(2): 27–32.

Cordell, H. K., M. A. Tarrant, B. L. McDonald, and J. C. Bergstrom. 1998. How the public views wilderness: More results from the U.S.A. survey on recreation and the environment. *IJW* 4(3): 28–31.

de Saussure, Raymond, 1962. Cave resources. In *Wilderness and Recreation: A Report on Resources, Values, and Problems*. ORRRC Report No. 3. Appendix B (pp. 322–24). Washington, D.C.: Outdoor Recreation Resources Review Commission.

Federal Cave Resources Protection Act of 1988. Public Law 88-691, 16 U.S.C. 4301 et seq.; 102 Stat. 4546.

Fleitas, J. 1998. Spinning tales from the world wide web: Qualitative research in an electronic environment. *Qualitative Health Research* 8: 283–92.

Fort Stanton-Snowy River National Cave Conservation Area. Senate Bill S. 1170. June 6, 2005.

Gamble, F. M. 1981. Disturbance of underground wilderness in karst caves. *International Journal of Environmental Studies* 18 33–39.

Harmon, D. 2003. The source and significance of values in protected areas. In The Full Value of Parks. *From Economics to the Intangible*, ed. D. Harmon and A. D. Putney (pp. 13–25). Boulder, CO: Rowman & Littlefield.

Hendee, J. C., and C. P. Dawson. 2001. Stewardship to address the threats to wilderness resources and Values. *IJW* 7(3): 4–9.

Huppert, G. N. and B. J. Wheeler. 1992. The case for underground wilderness. In *Proceedings of the Symposium on Designation and Management of Park and Wilderness Reserves*, ed. E. E. Krumpe and P. D. Weingart. 4th World Wilderness Congress. Boise: International Wilderness Leadership Foundation and the Department of Resource Recreation and Tourism, College of Forestry, Wildlife and Range Sciences, University of Idaho.

Kerbo, R., and J. Roth. 1989. Lechuguilla Cave on the edge of wilderness. In *1987 Cave Management Symposium*, ed. G. N. Huppert and D. R. McClurg (pp. 56–62). Huntsville, AL: National Speleological Society.

Krueger, R. A. 1995. The future of focus groups. *Qualitative Health Research* 5: 524–30.

Lechuguilla Cave Protection Act of 1993. Public Law 103-169, 103rd Congress, S. 1, December 2, 1993.

Leopold, A. 1991. The river of the Mother of God. In *The River of the Mother of God and Other Essays by Aldo Leopold*, ed. S. Flader and J. B. Callicott (pp. 123–27). Madison: University of Wisconsin Press.

McCloskey, M. 1990. Evolving perspectives on wilderness values: Putting wilderness values in order. In P. C. Reed (comp.), *Preparing to manage wilderness in the 21st century: Proceedings of the conference* (pp. 13-18; GTR-SE-66). Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station.

Millar, I. R. 1994. Aurora Cave and Mount Luxmore Caves: Cave management issues. Unpublished report to Te Anau Field Center. Nelson, New Zealand: Department of Conservation.

Outdoor Recreation Resources Review Commission. 1962. Study Report No. 3, *Wilderness and Recreation—A Report on Resources, Values, and Problems*. Washington, DC: U.S. Government Printing Office.

Parse, R. R. 1997. Concept inventing: Unitary creations. *Nursing Science Quarterly* 10: 63–64.

Putney, A. D. 2003. Introduction: Perspectives on the values of protected areas. In *The Full Value of Parks: From Economics to the Intangible*, ed. D. Harmon and A. D. Putney (pp. 3–11). Boulder, CO: Rowman & Littlefield.

Seiser, P. E. 2003. Dark wilderness: A phenomenological exploration of the idea of cave wilderness. Unpublished doctoral dissertation, West Virginia University, Morgantown, WV.

Smith, P. M. 1981. The Flint Ridge Cave System: A wilderness opportunity. A Cave Research Foundation Report (May 1961). In *The Cave Research Foundation Origins and the First Twelve years 1957–1968*, ed. R. A. Watson (pp. 157–69). Mammoth Cave, KY: The Cave Research Foundation.

Stitt, R. R. 1982. Underground wilderness. In *National Cave Management Symposia Proceedings*, ed. R. C. Wilson and J. J. Lewis (pp. 201–3). Oregon City, OR: Pygmy Dwarf Press.

———. 1991. Underground wilderness and the NSS. *NSS News* 49: 26.

———. 1993. Legal brief. In *National Cave Management Symposium Proceedings*, ed. D. L. Foster, D. G. Foster, M. M. Snow, and R. K. Snow (pp.275–88). Horse Cave, KY: The American Cave Conservation Association.

Stitt, R. R., and W. P. Bishop. 1972. Underground wilderness in the Guadalupe Escarpment: A concept applied. *Bulletin of the National Speleological Society* 34: 77–88.

Sutter, Paul S. 2002. Driven Wild: How the Fight against Automobiles Launched the Modern Wilderness Movement. Seattle: University of Washington Press.

Watson, R. A., and P. M. Smith. 1971. Underground wilderness: A point of view. *International Journal of Environmental Studies* 2: 217–20.

Wilderness Act of 1964. Public Law 88-577, 78 Stat. 890; 16 U.S.C. 1121 (note, 1131-36).

Wild and Scenic Rivers Act of 1968. Public Law 90-542, as amended, 16 U.S.C. 1271-1287.

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

Wood, M. 1983. Cave wilderness: The reconciliation of conservation and use. Unpublished bachelor's thesis, Lincoln College, New Zealand.

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Managing Caves as Wilderness at Sequoia and Kings Canyon National Parks, California

BY JOEL DESPAIN

Introduction

Wilderness has become one of the most popular ideas in the U.S. conservation movement. More than 100 million acres (over 40 million ha) have been designated wilderness, and since the Wilderness Act's inception in 1964 every U.S. president has signed a wilderness bill. Yet caves-as-wilderness is a concept that has not caught on, and no subterranean areas have been specifically declared wilderness within the United States (Seiser and Schuett, in this issue of *IJW)*. Caves contain values supported by the Wilderness Act, such as solitude for the visitor, untrammeled natural features and wildlife, and the existence of areas where people are clearly visitors.

More than 60 U.S. National Park Service (NPS) units have caves, including such notable areas as Carlsbad Caverns, New Mexico, and Mammoth Cave, Kentucky—the world's longest cave. However, many of the long and famous caves of the U.S. national parks do not underlie wilderness, such as Carlsbad, Mammoth, and Wind and Jewel (South Dakota). One important exception is Lechuguilla Cave within Carlsbad Caverns National Park, which is known for its great length, exceptional and beautiful mineral deposits, and unique microbes. NPS policies require that caves under wilderness areas also be managed as wilderness. In addition, NPS policies also require that areas recommended as wilderness, but not approved by the U.S. Congress, be managed as wilderness (NPS Management Policies 2001). Yet the specifics of wilderness management for caves have been left to individual parks, few of which have considered caves in their wilderness planning or as wilderness in their cave management planning.

In Sequoia and Kings Canyon National Parks in California, more than 230 caves have been documented. This includes the longest cave in California and half of the 10 longest caves in the state, although many of the 230 are small and remote (Despain 2004). The two parks contain 722,715 acres (292,598 ha) of wilderness and 106,580 acres (43,151 ha) of recommended wilderness, or combined 96% of the park land area. Most of these lands are the alpine high mountains of the Sierra crest. Park caves are generally located along the western slope of the Sierra Nevada at lower elevations compared to most park lands, and in some areas that were previously prospected for minerals. Therefore, many areas containing park caves are not in declared or recommended wilderness.

Joel Despain in Hurricane Crawl Cave. Photo by Dave Bunnell.

Many of the park's longer and more significant caves do happen to fall within wilderness and proposed wilderness boundaries. Of the 50 longest caves in the parks, 62% (31) are protected within areas managed as wilderness. It is these larger caves that are of concern to park managers. Smaller caves in wilderness are seldom visited, do not contain any infrastructure associated with cave visitors, and are not managed in ways that may conflict with wilderness values. Three of these larger caves, Lilburn, Soldiers, and Hurricane Crawl, will be considered in this article.

Larger caves are frequently visited by recreational cavers and cave researchers under park permit systems (see figure 1). This visitation creates opportunities for damage to features and resources of concern and, thus, the need for ongoing management. Although limited in extent and impact, the larger caves contain metal and concrete cave gates, metal

Figure 1—A caver in the largest room in Hurricane Crawl Cave and one of many found on lands managed as wilderness in Sequoia National Park, California. Photo by Dick La Forge.

ladders, research equipment, survey stations and entrances marked with fixed metal tags, surveyors flagging tape to delineate travel routes, fixed ropes, and metal rope anchors. This infrastructure, which protects cave resources or makes visitation to park caves safer, may be incompatible with wilderness values. The overuse of caves and the resulting damage to cave wildlife and ecosystems is an additional concern. Caver traffic may compact soils, trample small cave-adapted animals or their habitat, and move sediments from muddy areas to areas of bedrock or secondary calcite, marring their appearance and limiting their use as habitat.

Management policies derived from the park Cave Management Plan are reviewed in this article in light of wilderness management and include cave restoration, excavation for exploration, cave research, and cave search and rescue operations (SAR). The current Cave Management Plan, completed in 1996, all but ignores the implications of managing caves as wilderness. In it, park caves are assigned to categories of management that range from open to any and all visitation, to requiring a park-approved trip leader, to closed for almost all purposes due to specific hazards or particularly sensitive resources. The plan does incorporate the use of permits for most park caves, including the ones in wilderness. Currently the park is undertaking a major revision of the Cave Management Plan. An increased awareness of wilderness values and the wilderness significance of the two parks, combined with GIS technology that accurately delineates which caves are protected by surface area wilderness designation or recommendation make this issue a key component of the new planning effort.

The Consideration of Wilderness

Two things can act as guides in cave wilderness planning—the act itself and the management of surface lands as wilderness. The Wilderness Act of 1964 creates four primary criteria for wilderness: (1) That an area "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable." (2) Wilderness "has outstanding opportunities for solitude or a primitive and unconfined type of recreation." (3) A wilderness should have "at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition." (4) Wilderness "may contain ecological, geological, or other features of scientific, educational, scenic, or historical value." In addition the Act defines wilderness as "in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."

The imprint of humans' work in the form of gates, ladders, and other structures is obvious in some locations in park caves. But, in general, these areas are limited in extent. Solitude comes easily in a cave where absolute darkness is the norm and sounds are rare. Caves, although generally smaller in floor area than 5,000 acres (2,024 ha), are practical for preservation because they include small entrance connections to the surface. Park caves contain features of scientific, educational, scenic, and historical values. The biology and hydrology of park caves are the focus of many scientific papers (Krejca 2006; Tinsley 1999; Stock et al. 2004; Despain 2004). Park caves are the focus of many educational efforts, including educational tours at Crystal Cave and a park outreach program for area schools. Park caves are scenic—speleothems and the banded marble of park caves are very popular with visitors to Crystal Cave and with recreational cavers (see figure 2). Park caves also contain Native American artifacts of historical value. Park

caves in wilderness, although containing a few infrastructure components, are untrammeled and are not subject to controls that hamper natural forces (D'Agostino 1992). Finally, overnight stays are not currently allowed in any park cave in wilderness.

NPS wilderness management allows for Minimum Requirement Analysis, by which the minimum tool necessary for managing a wilderness area can assessed. Criteria for minimum requirement analysis within the NPS are: (1) Is it an emergency threatening human life? (2) Does the action conflict with the law? (3) Can the action be accomplished with less intrusive means? (4) Can the action be done outside of wilderness? NPS documents go on to ask, Is the action necessary? What would happen if the action did not go forward? Does the action benefit the resource? Have wilderness values been considered over convenience, comfort, politics, and economics?

The vast majority of park wilderness areas are wild, and the surface land management of wilderness allows defined trails and campsites in certain areas. Bear boxes in many areas attempt to keep these animals from human food and to keep them wild. Historic cabins and seasonal ranger stations exist at numerous sites. Overnight visitation to park wilderness requires a permit, and group party size is limited. In general, nothing in the current management of park caves in wilderness appears to be in conflict with the management of surface wilderness areas in the parks.

The three primary caves in this study (Lilburn, Hurricane Crawl, and Soldiers) are managed for different purposes. All three have or will have their own subplan attached to the greater park Cave Management Plan as an appendix. Lilburn Cave is a research site used primarily by the Cave Research Foundation (CRF). Within the cave, CRF maintains dataloggers and associated electrodes and probes, phone lines for transmitting data, and sediment samplers to assist with their research on the cave system. In addition, the cave contains three ladders at short vertical drop-offs, fixed bolt anchors at several sites where deeper pits exist, and surveyors flagging tape at approximately 10 sites to protect speleothems from trampling and damage (see figure 3), and nearly 100 fixed survey stations allowing spatial referencing of the research work in the cave. The cave has two entrances, both of which include cave gates. These features are scattered across 21 miles (34 km) of known cave passage.

Hurricane Crawl Cave is generally closed. The cave was recently discovered, contains many rare and very scenic cave speleothems, and endemic cave animals. Four trips per year maximum are allowed to enter the cave, and each must be accompanied by a park staff person. The cave contains no ladders, fixed bolts, or research equipment, but does contain two fixed ropes and numerous areas with surveyors flagging tape defining travel routes. The cave has two entrances, both of which are barred by cave gates. The cave has been surveyed, but no fixed survey stations have been created. The cave is approximately 2.5 miles (4 km) long.

Soldiers Cave is open for recreational caving with a park-approved trip leader. A maximum of 20 trips per year may enter the cave. It contains numerous fixed bolts for rigging ropes, and most of these predate wilderness designation. One ladder is in the cave to protect adjacent speleothems, and several areas of flagging are present to protect other formation areas. The cave has one entrance with a cave gate. The cave has been surveyed, but no fixed survey stations have been created. This cave also has endemic wildlife. Soldiers Cave is approximately 1.8 miles (3 km) long.

Figure 2—Redwood Creek deep inside the banded marble passages of Lilburn Cave contained within lands managed as wilderness by the U.S. National Park Service. Photo by Dave Bunnell.

Conflicts with Wilderness Values Matrix

Table 1 summarizes the potential conflicts in these three caves and includes the necessity for each potential action or infrastructure, the likely outcome of

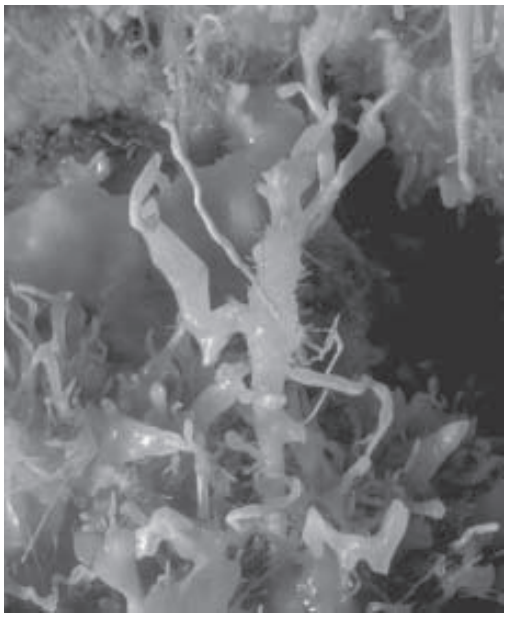


Figure 3—An extremely delicate helicitite speleothem composed of calcite in Hurricane Crawl Cave, one of many cave features protected within the Redwood Canyon and North Fork recommended wilderness in Sequoia National Park. Photo by Mark Fritzke.

minimum tool analysis, and the potential conflict with wilderness values. First, there are a number of visually intrusive components in park caves. These include fixed bolts, anchors, and affixed survey station tags that are potentially in conflict with the Wilderness Act because they permanently scar cave walls, must be replaced, which creates more scars, and may not be necessary as minimum tools. Ladders, flagging tape, and rope are also visually intrusive, but when not permanent, do not scar or mark cave surfaces.

Cave gates are likely the most significant impact on wilderness values and policies. But, clearly for Soldiers and Hurricane Crawl caves, which are prone to vandalism and are particularly delicate respectively, gates are a minimum tool for securing and protecting cave features. The case for minimum tool for Lilburn may be harder to make due to the cave's remote location and extremely mazy nature, which limits the ability of recreationists to find many of the cave's passages. The same complex passage junctions, multiple parallel passages, and few landmarks that "hide" the cave also make it dangerous because it is very easy to become lost. These features, combined with low temperatures inside this cave and many hazards, including loose rock, drop-offs, and pits, may mean that a gate on this cave is the minimum tool necessary for public safety.

Cave research and restoration seem to pose little conflict with the Wilderness Act. Such activities are specifically supported by the law. Restoration activities return areas to a close approximation of their original appearance and character. Research equipment, although visually intrusive, is temporary and removable. Cave SAR operations and excavation for exploration are more problematic. SAR operations can impact cave speleothems and features, but would be allowed due to the emergency nature of SAR operations under minimum tool analysis. Cave excavations are useful for research because they allow access for research and study, but they can conflict with wilderness values due to unsightly spoil piles, potential impact to habitat due to climate change within a cave after excavation, and possible damage to scientific materials contained in soils. Excavations deep in caves are far less likely to damage habitat through climate change and to disturb scientific materials, such as archaeological or paleontological materials, compared to surface excavations at new potential cave entrances.

The current use of park caves and the existence of closed areas help to limit the effects of trampling and disturbance on park cave wildlife. Low numbers and travel restrictions are important for limiting this impact in the future.

Conclusion

Cave management in a national park setting is already focused on conservation and research. Thus, many potential issues that could conflict with wilderness values and the Wilderness Act do not arise, such as the existing ban on camping in park caves. In a national park setting, smaller, remote caves that are not the focus of ongoing recreation and research are not likely to be threatened with respect to their wilderness resources and values. Wilderness values and management requirements can best be incorporated in the management of larger caves through the creation of specific plans for those specific caves. Wilderness and management issues will vary from cave to cave depending on the level of use, type of use, nature of resources to be protected, and other factors.

Visually intrusive infrastructure can impact wilderness values and should be limited in extent and visibility, temporary, and removable. Fixed anchors and survey stations should be avoided in wilderness caves due to the permanent damage they create on cave walls. When such anchors are used they should be justified with minimum tool analysis for that particular site. Existing anchors should be replaced in such a manner that no new scars are created on cave walls. Survey stations may be denoted using unfixed markers and the careful use of cave map cross sections to reveal the exact location of the point in question.

Overuse, trampling, cave gates, cave excavation, and cave SAR all have the potential for significant impact with respect to wilderness values. Careful and ongoing management of these issues is needed to ensure that they do not. Cave gates should only be implemented with a thorough minimum tool analysis; carefully managing the number of visitors to park wilderness caves should be an ongoing management goal; and cave excavations must not proceed without concern for potentially

Continued on page 7

Caves contain values supported by the Wilderness Act, such as solitude for the visitor, untrammeled natural features and wildlife, and the existence of areas where people are clearly visitors.

Table 1—Potential Conflicts with Wilderness Values–Based Research in Three Caves: Lilburn, Hurricane Crawl, and Soldiers

Infrastructure Component or Management Issue	Purpose	Rationale	Likely to Meet Minimum Requirements	Potential Wilderness Conflict
Cave gates	Security	Protects research equipment, cave speleothems, and promotes safety in a dangerous cave	Yes; due to the extremely fragile nature of this cave, gates are needed.	Visually noticeable humanmade features; permanent in nature; also visible from the surface wilderness
Dataloggers, electrodes, phone line, samplers	Research	Necessary for research	Yes	Visually noticeable humanmade features
Permanently tagged survey station	Research; survey & documentation of the cave	Necessary for research; permanent affixing to cave walls is questionable	No; do not have to be fixed	Visually noticeable humanmade features; permanent scarring of the cave walls during tag placement
Cave gates	Security	Protects research equipment, cave speleothems, and promotes safety in a dangerous cave	Uncertain; are gates needed on this cave?	Visually noticeable humanmade features; permanent in nature; also visible from the surface wilderness
Fixed rope anchors	Safety	Very useful for anchoring ropes to cave walls, including in areas with no natural anchor points	No; do not have to be fixed	Visually noticeable humanmade features; permanent scarring of the cave walls during bolt placement; bolt life span is 20 years
Ladders	Ease of travel; safety	Could be replaced with belay lines or fixed lines for single-rope-technique	No; other means could be used; do not have to be fixed	Visually noticeable manmade features; Often affixed to the wall leading to bolt holes and permanent scarring of the cave walls
Flagging of delicate areas	Protect speleothems	Needed to protect delicate features	Yes	Visually noticeable humanmade features; not permanent
Flagging to assist with route finding	Safety	Cave is very complicated and potentially dangerous.	Uncertain; necessary, or is training in route-finding better?	Visually noticeable humanmade features; not permanent
Overuse and trampling	Cave researcher travel	Necessary for people to visit the cave; the lower 150 feet of the cave floods on decadal cycles; most travel is in a few primary routes; cave sees approximately 35 parties of 3 to 4 people per year.	Yes; recreation and research are supported by the Wilderness Act; close areas with little travel to reduce trampling?	Greatest potential for wildlife is in upper levels where there are food sources; these areas do not flood; essentially all areas of the cave have seen some disturbance during survey work.
Cave restoration	Restoration	Restores habitat and adds to the cave's aesthetic appeal	Yes; habitat and wilderness enhancement is supported by the Minimum Requirement process.	Little
Cave excavation	Discover more cave passages	Adds to understanding of the park cave systems; allows documentation of park caves; usually effects very small areas deep in the cave	Uncertain; supports the discovery and management of previously unknown park resources; is it necessary?	Disturbance to soils, but limited in extent
Cave research	Better understanding of the cave and its processes	Helps with cave management and with a greater ecological understanding of park geomorphic processes	Yes; research is supported by the Wilderness Act.	Little, generally supported by the Wilderness Act
Cave SAR	Safety	Needed to protect researchers		Rescue routes are marked by flagging; generally easy to protect cave features during a SAR operation in Lilburn

PERSPECTIVES FROM THE
ALDO LEOPOLD WILDERNESS RESEARCH INSTITUTE

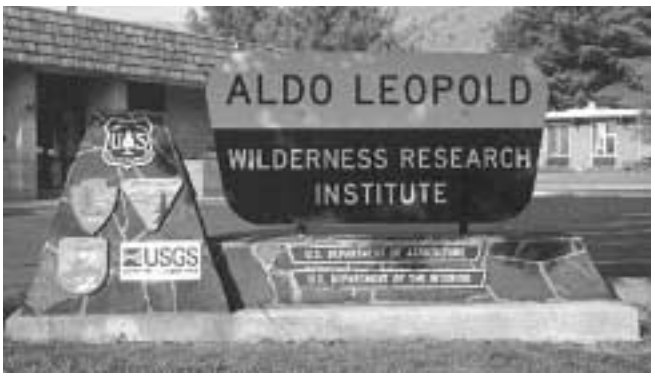
Revisiting Wilderness Science Priorities

BY DAVID J. PARSONS

The Aldo Leopold Wilderness Research Institute recently completed an extensive effort to address its role in meeting the future needs for science to support wilderness stewardship. Carried out in collaboration with wilderness managers and scientists from its partner agencies (Bureau of Land Management, Forest Service, Fish and Wildlife Service, National Park Service, and U.S. Geological Survey) as well as universities, NGOs, and international partners, this effort resulted in a new Program Charter that is expected to provide guidance to the institute's research, application, and service programs over the next decade. Approved in late 2005, the Program Charter identifies a program of work that aims to provide scientific leadership in bringing diverse groups of scientists and managers together in developing and using the knowledge needed to sustain wilderness ecosystems and values.

Building on a vision of being the premier institution for wilderness stewardship research, the Leopold Institute's Program Charter identifies important roles in the conduct, support, and facilitation of scientifically rigorous research; the delivery and application of research findings; and in fostering collaboration and partnerships with a wide variety of individuals and organizations. Much of the charter focuses on identifying a program of work that is built around five priority areas. These emphasize the importance of multidisciplinary approaches to challenging issues that face wilderness managers. The five problem areas identified in the charter are:

1. Recreation experiences and the impacts of recreation. This includes such topics as understanding the basic dimensions of human experiences in wilderness and influences on those experiences, biophysical impacts of recreation activities, guidelines for restoration of impacted sites, and an understanding of visitor distribution and flow patterns needed to guide planning and management decisions.
2. Relationships between people and lands protected for their wilderness values, including how these relationships affect and are affected by management policies and actions. This includes improved understanding of contrasting values of different stakeholders, conflicts between differing demands and interests, and the attitudes people hold toward public lands.
3. Stewardship of fire as a natural process. This includes an improved understanding of natural fire regimes, options and consequences of strategies for restoring fire as a natural process, and how social and institutional factors influence the evaluation of trade-offs by managers and the public.
4. Wilderness in the context of larger ecological and social systems. This includes such topics as the introduction, spread, and effects of nonnative species; global change and its effects on wildlife and other wilderness values; protection of water quality and quantity; and development of indicators and monitoring protocols to assess trends in ecological and social conditions.
5. The delivery and application of scientific knowledge and tools. This focuses on facilitating access to and improving awareness of scientific knowledge and tools, as well as investigating influences on and developing improved



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Wilderness and Persons with Disabilities

Transferring the Benefits to Everyday Life

BY LEO McAVOY, TOM HOLMAN, MARNI GOLDENBERG, and DAVID KLENOSKY

Abstract: Persons with disabilities are using the National Wilderness Preservation System, and they are receiving a range of benefits from such wilderness use. The means-end theoretical and analysis perspective was used to explore the outcomes and related meanings associated with participating in a wilderness experience program for people with disabilities as well as those without disabilities. Data were collected through a questionnaire completed by 193 trip participants (74 with disabilities and 119 without disabilities) immediately after their wilderness experience, and a telephone interview with 29 of those same participants conducted six months later. The wilderness visitors with disabilities are able to transfer the outcomes gained on the wilderness trip into parts of their lives when they return home—parts of their lives such as family, work, and their general perspective on life. The results show that participation in these inclusive wilderness trips results in a higher appreciation of nature and the wilderness for persons with disabilities. In fact, the wilderness environment is an integral component that generates these benefits.

Article co-authors from left: Leo McAvoy, Tom Holman, Marni Goldenberg, and David Klenosky.

Background

The personal benefits that people in general gain from wilderness and wilderness activities have been documented in a number of studies. Extensive reviews of this literature are available in papers published by Easley, Passineau, and Driver (1990); Ewert and McAvoy (2000); Hattie, Marsh, Neill, and Richards (1997); and Roggenbuck and Driver (2000). Having a disability does not preclude persons from visiting wilderness, and persons with disabilities are using wilderness and other primitive environments (Lais, McAvoy, and Frederickson 1992; McCormick 2001). The goal of the study reported here was to develop a better understanding of the

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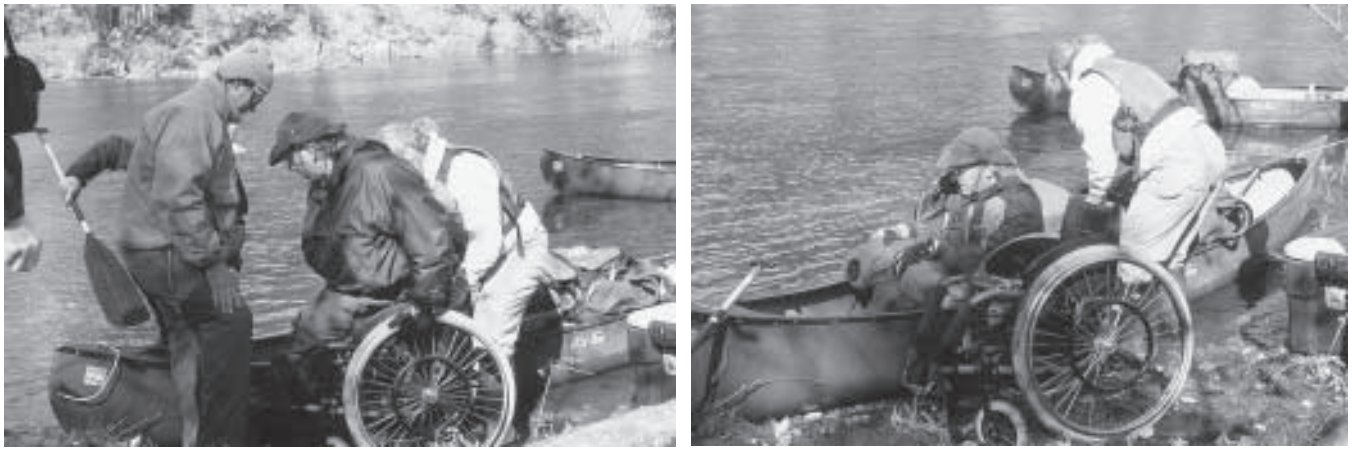

Figure 1a and b—Recreationist transferring from wheelchair into a canoe in the Boundary Waters Canoe Area Wilderness. Photo by L. McAvoy-Wilderness Inquiry.

Figure 2—Lake and mountain view in Yellowstone National Park. Photo by K. Beckman-Wilderness Inquiry.

outcomes that persons with disabilities associate with participation in a wilderness experience (see figure 1).

Research on Persons with Disabilities and Wilderness

Persons with disabilities are participating in outdoor recreation activities typically associated with wilderness. A large national survey, the National Survey on Recreation and the Environment (NSRE), included 1,252 persons with disabilities (Cordell 1999). Those with disabilities indicated they participate in a wide range of outdoor recreation activities, including: walking, family activities, sightseeing, picnicking, fishing, bird-watching, camping, hiking, boating, and hunting (see figure 2). McCormick (2001) further analyzed the Cordell study data for those with disabilities, and found that their levels of participation in outdoor recreation activities were equal to and in some instances greater than participation rates for those without disabilities. As an example, persons with disabilities who were under age 65 participated in primitive camping at a higher rate than did those without disabilities. Studies by Anderson, Schleien, McAvoy, Lais, and Seligmann (1997); McAvoy, Schatz, Stutz, Schleien, and Lais (1989); and Robb and Ewert (1987) all have indicated that persons with disabilities participate in even the most challenging outdoor activities, including wilderness activities.

Person with disabilities go to wilderness for a variety of reasons. Lais et al. (1992) questioned a sample of 80 persons with disabilities from across the country who had visited units of the National Wilderness Preservation System about their motivations for going to wilderness. Their responses were very similar to responses obtained from persons without disabilities in a number of larger studies (Roggenbuck and Driver 2000). Those motivations were (1) to experience scenery/natural beauty, (2) to experience nature on its own terms, and (3) to experience a personal challenge (see figure 3).

The value of wilderness participation for persons with disabilities is best expressed by those for whom wilderness is a very important part of their lives. Janet Zeller (1992), a person with quadriplegia who uses a wheelchair, commented on her experience on a wilderness canoe trip in Maine:

> I was back to feeling the quiet of the lake, listening to the loons at night as the sun goes down, the sounds of the night, living with the land—it was something that I had sadly missed. It was that place in my soul that needed to be refilled. And it was. At the end of that week I could say that I felt less disabled than I usually do. And it certainly was not because there were fewer barriers. It was the wilderness, that peace you can't get anywhere else. (p. 45)

In general, most persons with disabilities do not want the wilderness environment altered in order to make it more accessible. In the Lais et al. study (1992), 76% of those with disabilities did not believe the restrictions on mechanized use diminished their ability to use the wilderness. The larger McCormick (2001) study found that those with disabilities favored preservation of the wilderness environment over accessibility, even though some in the study favored increased access for those with disabilities.

Figure 3—Kayak trip on Lake Powell. Photo by B. Moritz-Wilderness Inquiry.

Anderson et al. (1997), studying persons with disabilities who go to wilderness areas, found that the wilderness environment itself was a major contributing factor to persons with disabilities realizing some of the major benefits of wilderness. Study participants indicated that the wilderness environment intensified their individual efforts, producing a dramatic positive impact on group development. Research by Brown, Kaplan, and Quaderer (1999) studied the preferences for natural settings for person with and without disabilities. They found that persons with disabilities had the same preference for undeveloped natural settings as did those without disabilities. Persons with disabilities valued the undeveloped, wild elements of wilderness, as did persons without disabilities (see figure 4). Indeed, research by Cordell, Tarrant, and Green (2003) indicated that a large majority of Americans value the wild aspects of wilderness, and favor protecting the lands within the wilderness system from development and exploitation.

Figure 4—Teaming up on the trail. Photo by G. Lais-Wilderness Inquiry.

Mike Passo, wilderness user and advocate, injured his spinal cord and now uses a wheelchair. He expressed his view of the need to keep wilderness wild:

> Wilderness is the great equalizer, it takes everyone down a notch because everyone is leaving their comfort zone. That leaves everyone on a wilderness trip at about the same level. It lets everyone see people for what they really are rather than how they get around. (personal communication, October 23, 2002)

Persons with disabilities also realize a full range of benefits from wilderness and from participating in wilderness activities. A number of studies have documented that persons with disabilities who participate in wilderness trips experience positive changes as a result of their wilderness experience, changes such as increased self confidence, increased likelihood of pursuing new challenges, and increased appreciation of diversity. Studies by Anderson et al. (1997), McAvoy et al. (1989), Scholl, McAvoy, Rynders, and Smith (2003), and Stringer and McAvoy (1992) show these benefits to include: increased self-efficacy, increased leisure skills, increased social adjustment, enhanced relationships, increased self-understanding and awareness of capabilities, increased self-directed activity, increased family satisfaction, increased appreciation for nature and the wilderness, and spiritual benefits.

Theoretical Framework

The theoretical frame for this study was provided by means-end theory, which was developed by marketing/advertising researchers (Gutman 1982;

Figure 5—Kayak camp in Queen Charlotte Islands, British Columbia. Photo by L. McAvoy-Wilderness Inquiry.

Reynolds and Gutman 1988) to better understand consumer decision-making behavior. Means-end theory has been applied to examine decision making in a variety of traditional product and service settings. Recently the approach has been used to examine the outcomes associated with outdoor recreation activities, including participating in a ropes/adventure course program (Goldenberg, Klenosky, O'Leary, and Templin 2000) and an Outward Bound program (Goldenberg, McAvoy, and Klenosky 2005).

Means-end theory posits that people think about the products and services they purchase, consume, and experience in terms of three key types of product meanings: (1) attributes, (2) consequences, and (3) personal values (Gutman 1982; Reynolds and Gutman 1988). Attributes refer to the characteristics or features of the product or service in question. In the context of a wilderness trip, relevant attributes would include a wilderness setting, the type of activities experienced while on the trip, and the other people on a group wilderness trip. Consequences refer to outcomes or benefits that are desired from the product or service experience, as well as undesirable outcomes or costs/risks to be avoided. Examples of consequences for a wilderness trip would include the benefits of experiencing nature, developing skills and abilities, and reflecting on one's life or situation, as well as potential costs/risks such as wasting time and money, feeling embarrassed, or risking physical injury. Personal values refer to enduring beliefs about desired or undesired modes of conduct or end states of being, in short, what a person wants in life or in living their life (Klenosky, Gengler, and Mulvey 1993). Values relevant to a wilderness experience might include a sense of accomplishment, self-awareness, and warm relationships with others.

Means-end theory links these three different meanings together in a single conceptual framework, known as a means-end chain (Gutman 1982). The attributes of a product/service are viewed as the "means" by which consumers/resource users obtain desired consequences/benefits (as well as avoid undesired consequences/costs), and achieve or reinforce important personal values or "ends" (Gutman 1982). An example of a means-end chain for a wilderness trip might link the attribute "wilderness environment" to the consequence of "appreciate nature," and this is linked to the value of feeling a "personal or spiritual connection to nature."

Transference

Outcomes and benefits of wilderness have been studied, but there has been little research documenting how wilderness visitors have been able to transfer into their daily lives benefits gained through wilderness experiences (Ewert and McAvoy 2000). This is especially true regarding persons with disabilities. Transference is the application of principles and attitudes learned from an experience into future experiences. Wilderness programs have the potential to create transference opportunities regarding principles and attitudes (Gass 1999).

The purpose of this study was to develop a better understanding of the outcomes that persons with disabilities associate with participation in a wilderness experience program (see figure 5). In addition, the study sought to better understand if and how participants who have a disability are able to transfer outcomes gained on a wilderness trip back into their everyday life after a program experience. The study focused on an integrated wilderness experience program where persons with and without disabilities participated in wilderness trips together. The wilderness outcomes of those without disabilities were included in the study to see if there were noticeable differences from the outcomes of persons with disabilities (see figure 6).

Methods

This study focused on persons who had participated in trips to wilderness areas or wildernesslike areas in Minnesota, Wisconsin, Montana, Maine, Florida, Alaska, British Columbia, and Ontario. The trips were taken with Wilderness Inquiry, Inc. (WI), a not-for-profit wilderness outfitter that provides wilderness trip experiences for persons with and without disabilities. Since water travel is more accessible for those with mobility impairments, most WI trips are water related (i.e., involve the use of canoes, kayaks).

WI's integrated trips combine participants with disabilities together with those without disabilities.

WI trips of at least four days in length during the summer season of 2002 were selected for this study. All participants (272) on these trips over the age of 18 were asked to participate in the study. Post-trip questionnaires were distributed to study participants on-site directly following the completion of their wilderness trip.

In the open-ended questionnaire, respondents were instructed to think about the three most important outcomes resulting from their wilderness trip experience ("think about the things you learned and the outcomes you received from participating in this trip"), and to write these outcomes in spaces provided on the questionnaire. Then they were asked to indicate in an adjacent space, for each outcome listed, why that outcome was important to them. They were then instructed to explain in another adjacent space on the questionnaire why that response was important ("and this is important to you because…"). Finally, they were asked to list the attribute or part of the trip that led them to each identified outcome. The process of having participants link a particular trip component (attribute) to one or more outcomes (consequences), and these outcomes to one or more personal values, formed a means-end chain or "ladder" of related meanings.

The concepts generated on the post-trip questionnaires indicating participants' attributes, consequences, and values, and how they are linked together, were entered into a computer data analysis program called Ladder Map (Gengler and Reynolds 1995). This analysis procedure groups concepts from the data into categories within each of the three means-end components (attributes, consequences, and values). The researchers then created codes corresponding to the concepts grouped in each category. The data were then analyzed again by the Ladder Map program to further sort all concepts into the coded areas. An independent coder analyzed a portion of the data to verify the accuracy and appropriateness of the codes created. The Ladder Map program summarizes the number of times each concept was associated with the other concepts included in respondents' ladders. These links were then used as the basis for constructing a Hierarchical Value Map (HVM; for an example, see figure 7), which graphically summarizes the important concepts and associations reported by the respondents.

Figure 6—The serenity of islands and the sea. Photo by L. McAvoy-Wilderness Inquiry.

An HVM depicts the attributes, consequences/outcomes, and values. Each concept in the HVM is represented as a circle. Attributes are represented using white circles (and all lowercase letters), consequences/outcomes using gray circles (and a mix of lower- and uppercase letters), and values using black circles (and all uppercase letters). The larger the circle the more frequently that concept was mentioned in participants' ladders, and the thicker the lines connecting concepts, the more frequently those concepts were linked together in the ladders. The HVM allows the researcher to see which concepts (i.e., attributes, outcomes, and values) were mentioned most frequently; and also see the chain of meanings that help explain how and why those concepts were important to the study respondents.

The questionnaire also asked participants if they were willing to be contacted by phone to further discuss their trip experience. Of the 111 participants who indicated they were willing to be interviewed, 30 subjects were selected in a stratified random sample to be contacted by phone for an interview six months after their wilderness trip. The phone interview consisted of questions related to the possible transference of outcomes into a person's life after the trip experience. Twenty-nine interviews were completed (14 with persons with disabilities and 15 with persons without disabilities), audiotaped, and then transcribed. The interview data were analyzed through qualitative techniques (Glaser and Strauss 1967), including reading all responses, establishing themes, coding narrative data to develop patterns, summarizing theme areas, and using respondent

statements to illustrate themes. Coding reliability was achieved by having a second coder analyze 25% of the interview data, and agreement was reached on coding themes and categories.

Results and Discussion

A total of 193 questionnaires were returned (71% response rate). Of the 193 respondents, 74 had at least one of a number of different disabilities, including cerebral palsy, spinal cord injury, multiple sclerosis, head injury, blindness, deafness, amputation, developmental disabilities, diabetes, and stroke. Respondents did not include anyone with a severe cognitive disability.

Consequences, Values, and Attributes

Thirty-one content categories were generated from the questionnaire data: nine referred to attributes, 14 to consequences, and eight to values (see table 1). Two Hierarchical Value Maps were generated from the content codes: one for people with disabilities (n=74), and one for people without disabilities (n=119). There were few differences between those with and those without disabilities, and these differences will be explained.

Table 1. Number of Times Concepts Mentioned in Respondents' Ladders

	Number of Respondents Mentioning Concept at Least Once	Percent of Respondents Mentioning Concept at Least Once
ATTRIBUTES MENTIONED		
Interactions	134	69.4
Trip overall	119	61.7
Wilderness experience	96	49.7
Canoeing	54	28.0
Program staff	38	19.7
New experiences	31	16.1
Kayaking	28	14.5
Camping	22	11.4
Hiking/horsepacking	6	3.1
CONSEQUENCES MENTIONED		
Relationships with others	190	98.4
Awareness	164	85.0
Personal Growth/challenges	135	69.9
Nature appreciation	117	60.6
New opportunities	78	40.4
New/improved skills	57	29.5
Rest/relaxation	41	21.2
Reflection	40	20.7
Physical fitness	31	16.1
Awareness of abilities	30	15.5
Family relationships strengthened	27	14.0
Knowledge	18	9.3
Achievement	16	8.3
Appreciation	16	8.3
VALUES MENTIONED		
Transference	175	90.7
Self-awareness/improvement/ fulfillment	91	47.2
Personal goal	78	40.4
Value (personal/spiritual)	66	34.2
Warm relationships with others	64	33.2
Fun and enjoyment of life	31	16.1
A sense of accomplishment	25	13.0
Self-confidence	15	7.8

Note. n=193

The HVM generated from the responses of those with disabilities appears in figure 7. The consequences mentioned most frequently by persons with disabilities included: Awareness (increased awareness of things in their lives and understanding of themselves), Relationships with Others (developing personal relationships with others), Personal Growth/Challenge (growing as a person and succeeding at a personal challenge), Nature Appreciation (increased awareness and appreciation for nature and wilderness), and New Opportunities (experiencing something new or different). The primary values associated with these outcomes included: Transference (a sense that the outcomes of the trip would transform or enhance aspects of daily life or life back home), Self-Awareness/Improvement/Fulfillment (feelings of being more aware, improved, or fulfilled in one's life), Value Personal/Spiritual (feeling or valuing a personal and spiritual connection to people and nature), Warm Relationships with Others (developing warm relationships with others on the trip), and Personal Goal (achieving one or more personal goals). The attributes or wilderness trip components that contributed most to the outcomes were Interactions (interactions with other participants during the trip), Trip Overall (the overall experience of taking the trip), and Wilderness Experience (being in a wilderness environment/setting).

There were several links worth noting among the attributes, outcomes, and values on the HVM for persons with

disabilities. The attributes Wilderness Experience and Canoeing linked to the outcomes Nature Appreciation and Awareness (suggesting that being in the wilderness and appreciating nature allowed participants to become more aware of and reflect on their lives), which linked to Personal Growth/Challenge, which then linked to thoughts about Transference (i.e., transferring the outcomes of the wilderness trip back home into their everyday lives). The attribute Interactions (interactions with others on the trip) linked to outcomes associated with better relationships with others and with family members (Relationships with Others and Family Relationships Strengthened), and to the value Warm Relationships with Others. The trip component of Wilderness linked to the outcome of Rest and Relaxation and then to the value of Transference, indicating that the rest and relaxation found on a wilderness trip can be transferred back home.

The HVM for the persons without disabilities (see figure 8) appears to be very similar to the HVM for those with disabilities, but there are some differences. Some persons with disabilities identified the outcome of Awareness of Abilities, and this did not appear on the HVM of persons without disabilities. This is not unexpected. Some persons with disabilities had little history of outdoor recreation or wilderness experience before their trip and may have thought that wilderness experiences were beyond their capabilities.

In the values category, persons with disabilities named the value of Warm Relations with Others and the value of Sense of Accomplishment, and these did not show up in the HVM for persons without disabilities. Persons with disabilities saw the wilderness trip as giving them incentive to move forward in developing warm relations with others

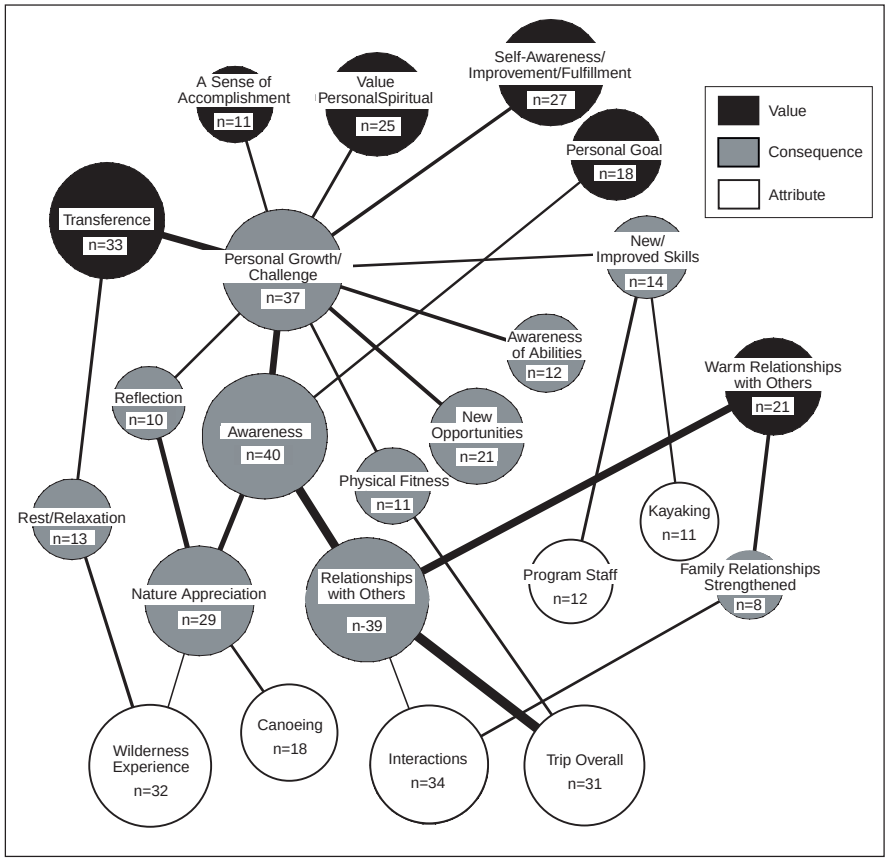

Figure 7. Hierarchical Value Map for Wilderness Inquiry participants with a disability (n=74)

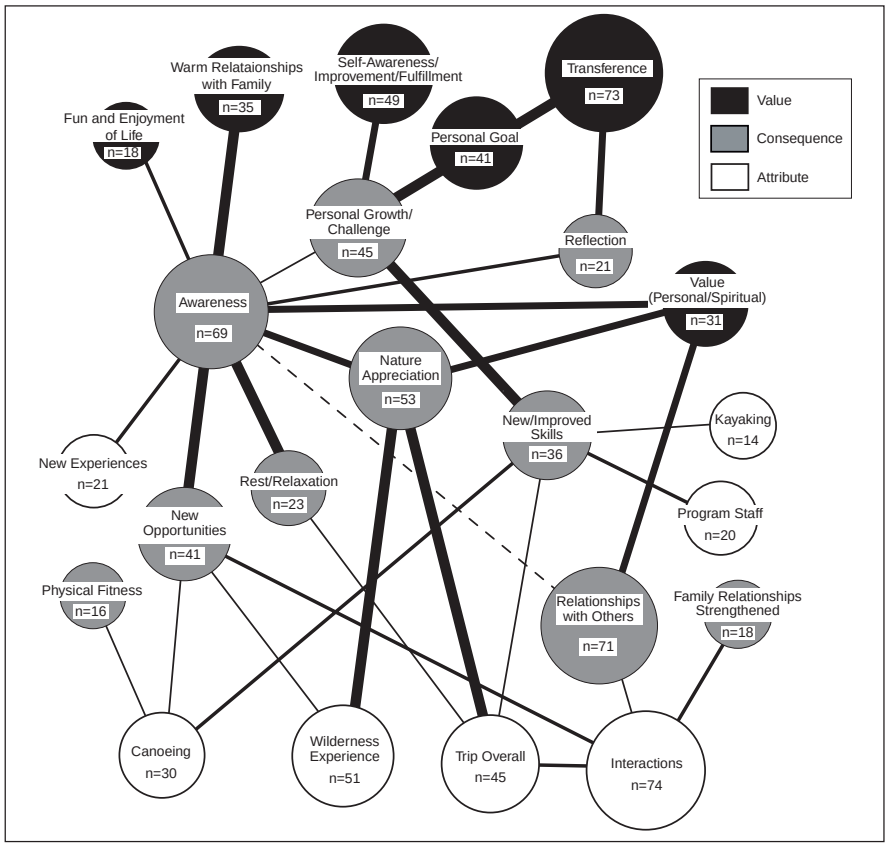

Figure 8. Hierarchical Value Map for Wilderness Inquiry Participants without a disability (n=119)

The research reported here indicates that persons with disabilities use and receive a range of benefits from wilderness, and the outcomes from that wilderness use have a lasting effect.

during and after the trip. They also saw the wilderness trip as an experience that brought them feelings of personal growth and facing challenges successfully, which linked to their overall sense of accomplishment in life.

Transference to Everyday Life

When asked on the questionnaires at the end of their wilderness trips the values of the outcomes gained on those trips, persons with disabilities and those without disabilities named Transference most often as a value. The code Transference represented responses where participants indicated they believed they could integrate or incorporate the outcomes gained in the wilderness back into their everyday lives at home. In an effort to develop a better understanding of this value, and to see if transference actually occurred once participants were back in their everyday lives, we selected a group of participants to interview six months after the wilderness trip experience. Fourteen of those interviewed were persons with disabilities. Caution is needed in generalizing from 14 interviews, but the in-depth responses (each interview was over an hour in length) help us to better understand how people with disabilities can transfer outcomes from a wilderness experience back into their everyday lives.

All of the 14 persons with disabilities who were interviewed were able to transfer outcomes from the wilderness trip back into their everyday lives. Results of the interviews suggest that participants with disabilities were able to transfer wilderness trip outcomes to their work, to outdoor skills, to their family lives, and to everyday stressful and challenging situations. Many participants also indicated overall higher levels of motivation and increased self-confidence in their regular life abilities as a result of their wilderness experience. The outcomes transferred to work included using communication skills, group interactions, teamwork, and trust at work. The transference to outdoor skills meant that participants acquired skills in lifetime outdoor recreation activities as a result of their wilderness trip experience. They learned how to camp, to canoe, to kayak, and they have continued those activities after the wilderness trip. These activities are now contributing to feelings of relaxation, peacefulness, connection to nature, and connections to other people.

Some study participants went on their wilderness trip with family members. They have been able to transfer outcomes including increased awareness of important aspects of their life and developing relationships with others into a deeper understanding of family members. They also have transferred better communication among family members and a confidence that the family can now go on outdoor trips as a group. The latter outcome is very important for families that include a person with a disability. Often these families are hesitant to go on an outdoor or wilderness-oriented outing because of the logistical concerns with access, safety, and comfort. One of the results of the wilderness experience in this study was the increased confidence that such a family feels regarding their ability to now take an outdoor-oriented trip as a family.

The participants with disabilities in this study came away with higher levels of self-confidence and motivation, and these outcomes were still present six months after the experience. Interview participants often referred to having a new outlook on what they could accomplish after their wilderness trip. An often-heard comment in the interviews was that having successfully accomplished difficult tasks on their wilderness trip, participants are now better able to accomplish other difficult tasks in their everyday life. The wilderness experience provided them with a fresh perspective on the issues of their lives. They expressed having more motivation to do more activities in daily life, including more challenging daily tasks. During an interview, one participant who was blind spoke of the wilderness trip as follows:

> It was probably one of the best things I've ever done in regards to building my confidence and really stepping out on a personal ledge for me. … And I think it has given me a lot more confidence to take on some of those really out-on-the-edge things; and just kind of say I did this so it makes me think that I can probably do anything I put my mind to.

Having been immersed in a wilderness environment during their trip, participants came away with a new or renewed appreciation for wilderness environments and wildlife. Some of those interviewed expressed having discovered a new wilderness area and valuing that discovery. Others noted seeing wildlife that the participant had never seen before and having an

increased understanding of wildlife. These outcomes transferred into the participants having a deeper appreciation for the beauty and diversity of wilderness and a deeper commitment to preserve these wilderness areas and wildlife resources.

Recommendations for Managers

The research reported here indicates that persons with disabilities use and receive a range of benefits from wilderness, and the outcomes from that wilderness use have a lasting effect. These wilderness visitors are able to transfer the outcomes gained on a wilderness trip into parts of their lives when they return home, parts of their lives such as family, work, and their general perspective on life. This study also indicates that for persons with disabilities, participation in wilderness trips results in a higher appreciation of nature and the wilderness.

Wilderness managers are charged with the difficult task of balancing the current use and enjoyment of wilderness with the need to preserve the quality of wilderness so it is unimpaired for future use and enjoyment. Previous research has indicated that people with disabilities want wilderness to be every bit as challenging and pristine as do those without disabilities. The research reported here indicates that persons with disabilities are receiving benefits from wilderness in its undeveloped, primitive state. The wilderness environment seems to be an excellent setting to receive those benefits.

Wilderness is not intended to be a developed recreation facility. The remoteness and physical challenge of access are part of what makes wilderness what it is. Managers are not expected to solve accessibility problems for person with disabilities. On the other hand, managers can provide information about the levels of access available in wilderness areas. They can provide prospective wilderness visitors with information about outfitters and programs that provide wilderness opportunities for persons with disabilities. Managers can also enter into cooperative agreements with such outfitters and programs to provide wilderness access for a broad range of people.

As the country's demographics and wilderness use patterns continue to change, wilderness management agencies will have to continually pay attention to various constituency groups to maintain the ideal of wilderness and the existence of wilderness. Persons with disabilities care about wilderness, and receive benefits from the existence of wilderness. There are currently 43 million Americans with a disability, and that number is increasing. Wilderness agencies are going to have to continue to understand and communicate with this important stakeholder group because wilderness is important to persons with disabilities. Barry Corbet (1992), a mountaineer, editor, and person with paraplegia appropriately expressed the importance of wilderness to persons with disabilities: "We especially, with all our motor and sensory constraints, need activities which focus on the limitless, not the limitations. We need beauty to counteract the grit in our lives. We need novelty and discovery. We need wilderness" (p. 30). **IJW**

REFERENCES

Anderson, L., S. J. Schleien, L. McAvoy, G. Lais, and D. Seligmann,1997. Creating positive change through an integrated outdoor adventure program. *Therapeutic Recreation Journal* 21(4): 214–29.

Brown, T., R. Kaplan, and G. Quaderer. 1999. Beyond accessibility: Preference for natural areas. *Therapeutic Recreation Journal* 33(3): 209–21.

Corbet, B. 1992. Going wild: Your guide to outdoor adventure. *Spinal Network EXTRA* (Spring) 30(31): 44–49.

Cordell, K., ed. 1999. *Outdoor Recreation in American Life: A National Assessment of Demand and Supply*. Champaign, IL: Sagamore.

Cordell, K., M. Tarrant, and G. Green. 2003. Is the public viewpoint of wilderness shifting? *IJW* 9(2): 27–32.

Easley, A. T., J. F. Passineau, and B. L. Driver, comps. 1990. *The Use of Wilderness for Personal Growth, Therapy, and Education*. Gen. Tech. Rep. RM-193. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

Ewert, A., and L. McAvoy. 2000. The effects of wilderness settings on organized groups: A state-of-knowledge paper. In *Wilderness Science in a Time of Change Conference. Volume 3: Wilderness as a Place for Scientific Inquiry*, comp. S. McCool, D. Cole, W. Borrie, and J. O'Loughlin (pp. 13–26). Proceedings RMRS-P-15-Vol 3. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Gass, M. 1999. Transfer of learning in adventure programming. In *Adventure Programming*, ed. J. C. Miles and S. Priest (pp. 227–34). State College, PA: Venture Publishing.

Gengler, C. E., and T. J. Reynolds. 1995. Laddermap . Camden, NJ: Means-End Software.

Glaser, B. G. and A. Strauss. 1967. The Discovery of Grounded Theory: Strategies for qualitative research. Chicago, IL: Aldine Press.

Goldenberg, M.A., L. McAvoy, and D. B. Klenosky. 2005. Outcomes from the components of an Outward Bound experience. *Journal of Experiential Education* 28(2): 123–46.

Goldenberg, M. A., D. B. Klenosky, J. T. O'Leary, and T. J. Templin. 2000. A means-end investigation of ropes course experiences. *Journal of Leisure Research* 32(2): 208–24.

Gutman, J. 1982. A means-end chain model based on consumer categorization processes. *Journal of Marketing* 46: 60–72.

Hattie, J., H. W. Marsh, J. T. Neill, and G. E. Richards. 1997. Adventure education and Outward Bound: Out-of-class experiences that make a lasting difference. *Review of Educational Research* 67(1): 43–87.

Klenosky, D. B., C. Gengler, and M. Mulvey. 1993. Understanding the factors influencing ski destination choice: A means-end analytic approach. *Journal of Leisure Research* 25(4): 362–79.

Lais, G., L. McAvoy, and L. Frederickson. 1992. *WildernessAccessibility for People with Disabilities: A Report to the President and the Congress of the United States on Section 507 (a) of the Americans with Disabilities Act*. Washington, DC: National Council on Disability.

McAvoy, L., E. Schatz, M. Stutz, S. J. Schleien, and G. Lais. 1989. Integrated

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Writers and Wilderness

How to Recapture the Momentum in Saving Wilderness

BY ROBERT C. BARON

Many of us were introduced to nature at a young age. In most cases, our education was started by a parent or grandparent, a teacher or friend, someone our age or many years older. But we were led outside and taught how to see, what to look for, and our questions of what and why were answered.

John Hendee and Bob Baron sharing field observations while on a trip in Alaska following the 8th World Wilderness Congress in 2005. Photo by Chad Dawson.

Sometimes the first introductions to nature are very specific—the name of a bird or a flower, what the formation of the clouds signify, what that bright light in the night sky means and why its position in the sky changes with the seasons, why birds fly north in the spring. Some of us, as a result of this early start, have become naturalists, botanists, ecologists, teachers, and other professionals. Almost all of us prefer being outdoors to being in an office, and to spend our weekends continuing the explorations of our youth.

This personal introduction to nature is often a one-on-one experience. One parent teaches one child how to appreciate and love the world in which we live.

But there are a few people who are able to broaden their audience. These artists, photographers, filmmakers, lecturers, and writers reach out to many, in some cases to thousands or even millions. And by their work they influence the world. Think of John Muir and his writings that helped develop our national parks, or Rachel Carson who wrote about DDT and pesticides and helped bring the bald eagle back from the brink of extinction, or Ansel Adams whose photography caused many people to see nature in a new way.

The theme for the 8th World Wilderness Congress (8th WWC) in Alaska in 2005 was Wilderness, Wildlands and People: A Partnership for the Planet. The conference addressed the importance and benefits of wilderness to contemporary and traditional human societies, using the latest information to make the strongest case possible for balancing wilderness protection and human needs. Among the highest of human needs is the spiritual value of wilderness.

At the 8th WWC, special attention was paid to those photographers and writers who have guided our relationship with nature. The International League of Conservation Photographers was established by 40 of the world's finest conservation photographers. And during the congress we heard from and paid tribute to writers, both from the past and the present.

Writers have strongly influenced our views on nature and wilderness. For three days, established and new writers from around the world shared their experiences and future plans.

> What I sought in books was imagination. It was depth, depth of thought and feeling; some sort of extreme of subject matter; some nearness to death; some call to courage. I myself was getting wild; I wanted wildness, originality, genius, rapture, hope. I wanted strength, not tea parties. What I sought in books was a world whose surfaces, whose people and events and days lived,

> actually matched the exaltation of the interior life. There you could live. (Annie Dillard in Gilbar 1989, p. 118)

Some writers describe what they see in nature, and how wondrous it is. In this they are similar to a nature photographer who takes pretty pictures. But some writers have an underlying message; something important they are trying to convey to the reader. The best of the environmental writers, such as Henry David Thoreau, John Muir, Rachel Carson, Sigurd Olson, and Aldo Leopold, communicated to inform and influence as well as to provide feelings about nature. Perhaps that is why their books still affect readers today.

Most nature writing is local, whether a small pond in Massachusetts, a remote cabin in Alaska, a small woodlot in Wisconsin, a beach in Maine, a mountain vista in the Catskills, a valley in Yosemite. A few writers are able to take a small wild place and make its story universal and personal. And, in the writing, change us forever.

Modern-day Wilderness Authors

In a preliminary session on writing and advocacy at the 8th WWC, established writers talked about their work and its meaning, where they were, what they were thinking and feeling, and what they were trying to communicate. These writers, Dave Foreman (*Rewiring North America: A Vision for Conservation in the 21st Century*), Jay Griffiths (*A Sideways Look at Time*), John Haines (*The Stars, the Snow and the Fire*), Patty Limerick (*The Legacy of Conquest*), David Quammen (*Song of the Dodo*), and Marianne Wallace (America's Ecosystems series), are among the leading authors today.

This session was followed by a tribute to five deceased people who through their writing affected our vision of the natural world and helped to preserve wilderness. These people—Henry David Thoreau, John Muir, Rachel Carson, Edward Abbey, and David Brower—had major influence on conservation and love of the land. A short biography of each person was given and then selections from their work were read.

Another session dealt with writers and Alaska. Alaska had been purchased from Russia in 1867. It became a territory in 1912, and a state on January 3, 1959. Today, almost a century after becoming a territory and a half-century after statehood, Alaska remains the last American frontier.

Alaska is a place where people come to live out their personal dreams. In a panel, Children of Dreamers, contributors to a new book called *The Alaska Reader*: *Voices from the North*, discussed what it meant to live in the shadow of others' dreams of Alaska. In another panel, Alaska as a Parable for the Future, contributors to the anthology discussed why Alaska is a canary in the mine for so many issues of national and global significance. These sessions were led by the editors of the anthology: Carolyn Kremers and Anne Hanley. Ten major Alaskan writers participated.

Another session dealt with Native Writings from North America. Marilou Awaikta and Daniel Wildcat talked about writing and its importance to their culture, their environment, and their world. They paid tribute to some of the major Native writers.

Finally, in a session called Passing the Torch, writers met and talked about their work, and received advice and encouragement from other writers, producers, editors, and publishers. These conversations continued well into the evening.

At the Congress, The WILD Wilderness Writing Award was announced for the best newspaper article, magazine article, essay, book, or body of work published relating to meaningful and significant writing on wild nature, the environment, or the land. Submissions in English anywhere in the world are eligible. The first annual WILD Wilderness Writing Award was presented to John Haines of Alaska. Through his poetry and essays, John has contributed greatly to our appreciation of this world we share.

Most Influential Authors

At the congress, a questionnaire was distributed asking participants which writer(s) influenced them the most. There were 100 writers listed on the survey, and participants added several other names. Participants identified 91 writers, with most people mentioning several writers who have had great influence on them.

Five of these writers were honored at the congress. Sixteen others received numerous votes for their influence on attendees. These writers are Wendell Berry, Annie Dillard, Loren Eisley, Aldo Leopold, Barry Lopez, Peter Matthiessen, John McPhee, Margaret Murie, Roderick Nash, Sigurd Olson, Roger Tory Peterson, David Quammen, Gary Snyder, Wallace Stegner, Terry Tempest Williams, and Laurens van der Post. Several of them will be honored at the 9th World Wilderness Congress.

Being a writer can be a very lonely occupation. Yet a writer and a book can reach out across the centuries and the miles, touching the hearts and minds of other human beings. Writers who received mention were born as early as 1739 and as late as 1963. Yet their words and ideas are known and treasured by people from around the world in 2005.

As people working for the preservation of wilderness, it is essential to read the best writings and understand the

intellectual grounding of the movement. In this way, we can build on the ideas of the past and move strongly toward the future. For the same reason that every citizen should know about the Declaration of Independence, the American Revolution and Civil War, Washington, Lincoln, and Roosevelt, so everyone who works to preserve the planet and the creatures we share it with should know our history.

What should be read by everyone? The list of classic books is long but would certainly include: *Walden* by Henry David Thoreau, John Muir's *The Mountains of California*, Aldo Leopold's *Sand County Almanac*, Henry Beston's *Outermost House*, Annie Dillard's *Pilgrim at Tinker Creek*, Edward Abbey's *Desert Solitaire*, Sally Carrighar's *One Day at Teton Marsh*, Sigurd Olson's *Reflections from the North Country*, and Rachel Carson's *A Sense of Wonder*. The list could be extended significantly, but this is a good start.

A few writers are able to take a small wild place and make its story universal and personal. And, in the writing, change us forever.

All of us who were at the congress know the value of wilderness, preservation, and the importance of people, animals, and places. We need to widen our constituency. Some of us must reach out to additional thousands of people and tell why it is essential to conserve parts of the world. Those of us who are writers, photographers, teachers, filmmakers, speakers, and publishers have to let our voices be heard.

There is no shortage of people who wish to drill, dig, and pave over the planet anywhere, anytime. To them, the only value of a tree is as lumber, an animal as a trophy or as food, an open space as a paved parking lot for another Wal-Mart or strip mall.

But there have always been some who have fought to preserve the planet, its land, and the plants and animals who inhabit it. At the congress we honored the writers and photographers who have led the battle.

"There is just one hope for repulsing the tyrannical ambition of civilization to conquer every niche of the whole earth. That hope is the organization of spirited people who will fight for the freedom of the wilderness" (Bob Marshall, 1930).

The battle is hard and relentless. A writer may not know who he or she influenced or how long is his or her shadow. Henry David Thoreau championed the human spirit against materialism and conformity. During his lifetime, fewer than 2,000 copies of his books were sold. But his voice and words are with us now. John Muir fought hard and not always successfully. But what he built and stood for has changed the environmental movement. Rachel Carson, sick with cancer, gave us *Silent Spring*, and today the eagles and the osprey are back from the edge of extinction.

My favorite philosopher, Lucy from the Peanuts cartoon strip, said, "There is no problem so big or so complicated that it can't be run away from." And our elected leaders in Washington and other places have for decades followed this advice—on formulation of a national energy policy, acting on global warming, funding our national parks, enforcing the Clean Air and Water Acts, and much more.

Recapture the Momentum in Saving Wilderness

As a species, we believe in our technology, our power, our money, our egos. But Mother Nature can show us who is really in charge—in the recent hurricanes hitting the Gulf Coast, in global warming, arctic ice meltdown, earthquakes, tsunamis, and in countless other ways.

But nature can also be a teacher. We can learn in a quiet walk through wilderness. We are part of nature and nature is part of us. No matter what a few misguided people say about evolution, our ancestors have been on this planet for millions of years, and we should not cut off that portion of our heritage.

Wilderness is under attack in Africa, in Latin America, in Siberia, and around the globe. Species dependent on wilderness are in danger. We must fight for endangered species, the chimpanzee, gorilla, panda, tiger, blue whale, northern spotted owl, Asian elephant, white rhino. But more than that, we must fight for wilderness, for nature, for undeveloped space, and for the creatures and plants with whom we share the planet.

The writers' sessions at the 8th WWC were titled Writing and Advocacy. We need to convince the silent majority to become the vocal majority, to get people to fight for wilderness, wild places, species, clean air and water. Some did it in the 1960s when major legislation was passed with strong bipartisan support, and we have benefited. We need to continue and escalate the fight. We owe it to our grandchildren and to future generations.

We have let some politicians be wrong on Middle East oil, on tax policy for the rich, on balancing the budget, on domestic policies, and most

importantly on the environment. It is time to fight strongly for the truth, to not let noise be confused with wisdom or sound bites for thought, to have our message be heard, and to leave the world a better place.

Preservation of our wilderness and expansion of our national parks has traditionally been a Republican issue. Yet we have in Washington today a group from the radical right that wishes to destroy what has been preserved for centuries. It is time for moderate Republicans, Democrats, and Independents to fight for the land, to speak out for wild nature, to acknowledge the intrinsic value of all life-forms.

A shift of 1% or 2% of the votes would have changed the last several elections. If a politician, any politician, does not care about the future that we leave to our grandchildren or about the environment, and will not address the issues, he or she should be defeated. It is time for us to speak out. It is time for us to take back our country.

Finally, there are excellent young writers, some of whom were at the 8th WWC, born in the 1970s and 1980s, who will someday be considered in the same class as those named previously. There are also great writers from Africa, Latin America, Asia, and elsewhere, unknown to those in North America and Europe. It is our jobs as readers, as editors, and as publishers to find them, to encourage them, and to read their books.

The fight for wilderness and the natural world continues. We are grateful to those who write about our relationship to wilderness. **IJW**

REFERENCES

Gilbar, Steven, ed. 1989. *The Open Door: When Writers First Learned to Read*. Boston: David R. Godine.

Marshall, Bob. 1930. The problem of the wilderness. *The Scientific Monthly* (Feb.): 43–52.

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From REVISITING WILDERNESS SCIENCE PRIORITIES on page 22

approaches for effective science delivery and application.

In addition to these priorities, the Program Charter outlines a renewed commitment to collaboration and partnerships. To fulfill its science leadership vision the Leopold Institute must work closely with the science and management staffs of the federal wilderness agencies to identify information needs and priorities and apply research findings to management and policy issues. Scientific collaboration with the many other scientists that conduct research important to wilderness management or that use wilderness as study sites is particularly important. In an effort to further strengthen its collaborative activities, the Leopold Institute has recently formalized a Visiting Expert and Exchange Program in which scientists, managers, students, and other specialists with expertise in areas relevant to wilderness science or management can be hosted at the institute for varying periods of time.

The Leopold Institute's 2005 Program Charter, as well as additional information on its wide variety of research and science delivery and application programs, can be found at http://leopold.wilderness.net.

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wilderness adventure: Effects on personal and lifestyle traits of persons with and without disabilities. *Therapeutic Recreation Journal* 23(3): 51–64.

McCormick, B. P. 2001. *People with Disabilities: National Survey of Recreation and the Environment*. Retrieved December 2, 2004, from Indiana University, National Center on Accessibility website: http:www.ncaonline.org/research/nsre.htm.

Reynolds, T. J., and J. Gutman. 1988. Laddering theory, method, analysis, and interpretation. *Journal of Advertising Research* 28(1): 11–31.

Robb, G. M., and A. Ewert. 1987. Risk recreation and persons with disabilities. *Therapeutic Recreation Journal* 21(1): 58–69.

Roggenbuck, J. W., and B. L. Driver. 2000. Benefits of nonfacilitated uses of wilderness. In *Wilderness Science in a Time of Change Conference. Volume 3: Wilderness as a Place for Scientific Inquiry*, comp. S. McCool, D. Cole, W. Borrie, and J. O'Loughlin (pp. 33–49). Proceedings RMRS-P-15-Vol 3. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Scholl, K., L. McAvoy, J. Rynders, and J. Smith. 2003. The influence of an inclusive outdoor recreation experience on families that have a child with a disability. *Therapeutic Recreation Journal* 37(1): 38–57.

Stringer, L. A., and L. McAvoy. 1992. The need for something different: Spirituality and wilderness adventure. *Journal of Experiential Education* 15(1): 13–20.

Zeller, J. 1992. Is there wilderness after quadriplegia? *Spinal Network EXTRA* (Spring): 32.

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El Carmen

The First Wilderness Designation in Latin America

BY PATRICIO ROBLES GIL

Wilderness conservation is a series of stories, as much about personal vision and commitment as it is about science, law, and policy. To the stories of Ian Player in South Africa; Bob Marshall, Sigurd Olson, Aldo Leopold, and Howard Zahniser in the United States; and other pioneers, we can now add that of Patricio Robles Gil in Mexico. At the 8th World Wilderness Congress in Alaska, October 2005, the multinational cement company CEMEX announced the designation of a 75,000-hectare (185,250-acres) wilderness on their corporate landholdings in northern Mexico, and the government of Mexico announced new wilderness legislation to address wilderness protection on these private lands and several other land ownership regimes. In this article, Patricio tells his personal story of this conservation accomplishment, and the people who worked with him to make it happen.

—Vance Martin International *IJW* Editor

The process of experiencing wilderness, and then advocating for its protection and sustainability, can create a collage of distinct, often varying episodes that forms a fascinating and unforgettable personal picture of one's own life. Each element of the collage—from the wilderness, a meeting, or a conversation—is often so different that they rest in my mind as unique encounters with nature and people, the sum total of which produces within me a sense of dynamic peace.

I'll try to explain—in English!—this process, which for me has been a challenge, a passion, and a commitment. It has been an evolution of thought, concept and action, changing and growing with each person I've tried to convince about the value of wild open spaces.

Article author Patricio Robles Gil.

For 16 years I've been involved in the conservation of nature through Agrupacion Sierra Madre, the nongovernmental organization (NGO) that I founded in Mexico. This country gave me the opportunity to understand the challenges of conservation. I truly believe that if we want to establish a conservation movement and create an environmental culture, our society must understand the importance of wildness, and the threats that imperil wilderness. Thus, a large portion of my time has been focused on these two primary issues.

In some cases I have been involved in the field with ranchers, *campesinos*, ethnic groups, scientists, and researchers. These experiences taught me a great deal, primarily that communication is essential in order to "sell nature to society." This realization caused me to coin the term "conservation marketing," and for it to be the central organizing principle of my work.

As conservationists we also need to create successful, practical, and replicable conservation models. I consider myself a promoter of these models and techniques, with a focus on species management, biodiversity conservation, and the protection of wild, open space without an industrial human footprint. This last concept is where my heart lies, so when the president of The WILD Foundation, Vance Martin, suggested that Mexico could embrace wilderness, I saw the opportunity to build on this concept a more intimate relationship between the modern Mexican people and its natural wild places, or *tierras silvestres*.

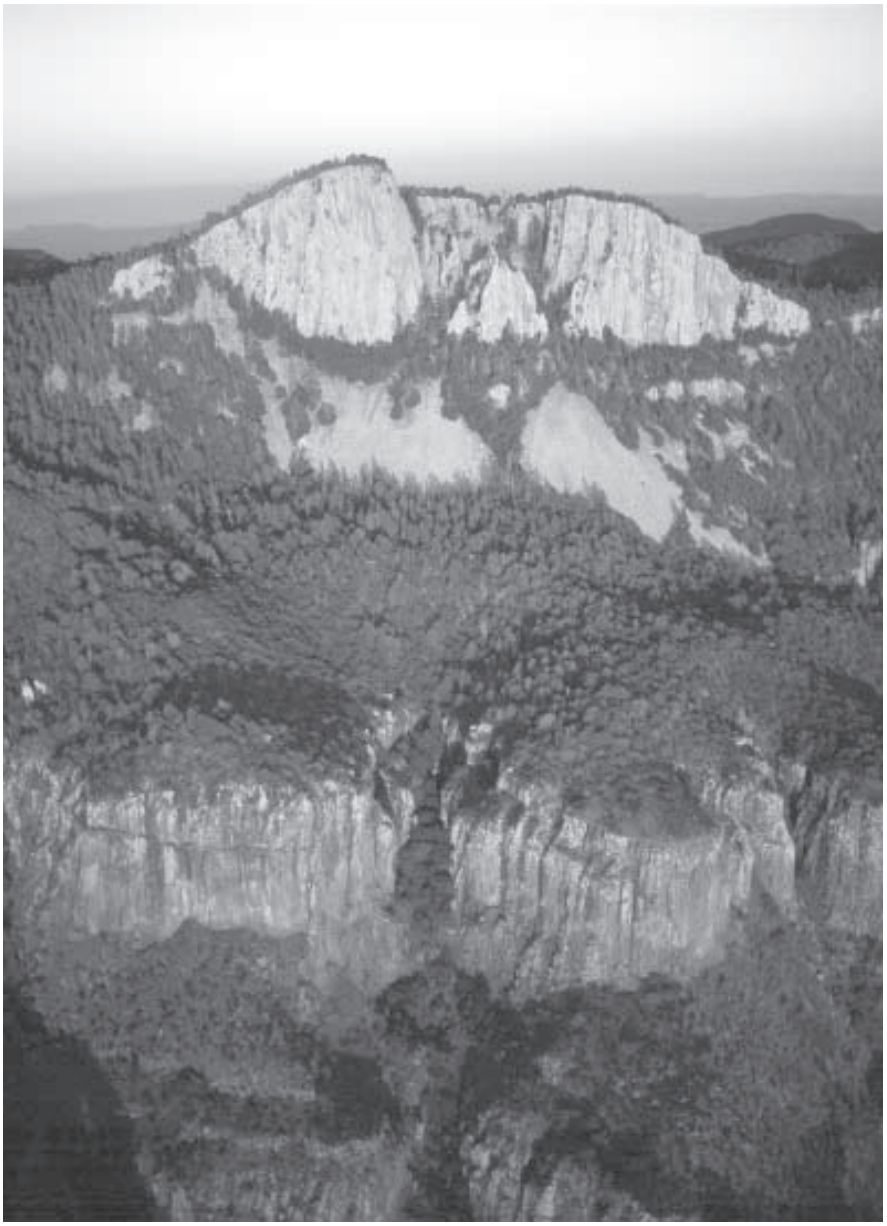
Conservation Movement in Mexico

This process of helping Mexico to protect large areas of wild land has become one of the most interesting debates

in which I have been involved. To help you understand this, I'll briefly summarize the conservation movement in Mexico.

First of all, Mexico's southern part is in the Neotropics region, and tropical rain forest habitats are dominant. The northern area is Nearctic, with primarily arid habitats, except the pine-oak forest of the high mountains. The interaction of these different ecosystems results in enormous biodiversity, placing Mexico among the top-five megadiversity countries worldwide. This natural wealth produced some of the most remarkable cultures on the planet—Mayas, Aztecs, and Olmecs—that used these resources to create great empires. Therefore, all over Mexico, wetlands and forests were heavily used, and the impact of the human footprint spread almost everywhere. Only the deep canyons and remote deserts of the northernmost system remained reasonably unaltered.

Second, Mexico's system of land tenure is a significant factor for the status of our protected natural areas. There is a saying that Mexican land has been given "several times" to its people. After the agrarian reform, a high percentage of the land was held under communal private property, or *ejidos.* This means that there is virtually no public land, so the government cannot unilaterally set any aside protected areas. Integrated, complex efforts are required. This makes conservation of wilderness and biodiversity a singular and interesting challenge, because the general public has almost no access to wild open spaces. In all the other countries that have wilderness legislation, the experience of wild nature by the public has been instrumental in creating the movement and subsequent legislation. Mexico essentially lacks a popular culture, or relationship, with nature, and our language has not even a word that conveys the meaning of wilderness.



Sierra del Carmen, Coahuila, Mexico, the location of the first designated wilderness in Latin America. Photo by Patricio Robles Gil, courtesy of Agrupacion Sierra Madre.

El Carmen

I could only conceive of protecting Mexican wilderness by first identifying a place that everyone would consider wilderness: El Carmen—a sky island—is in northern Coahuila on the border with Texas's Big Bend National Park. For special reasons, this place is the cradle of my involvement with wild nature and my commitment to its conservation. The mountain range has been declared a Flora and Fauna Protected Area (FFPA), one of the least strict categories of the Mexican protected areas system. Its management plan allows people and cattle to live inside the protected area, and Mexican legislation allows environmentally aggressive activities such as mining inside the perimeter.

El Carmen is a keystone in a huge complex of transboundary protected

El Jardin escarpment of Sierra del Carmen, a "sky island" in the Chihuahuan desert. Photo by Patricio Robles Gil, courtesy of Agrupacion Sierra Madre.

areas that comprise one of the biggest high-biodiversity megacorridors in North America. In the last year Agrupacion Sierra Madre has focused its efforts on the promotion of El Carmen-Big Bend Conservation Corridor Initiative, a conservation initiative that holds one of the most diverse arrays of conservation models in the world, ranging from government protected areas to a private protected area managed by a corporation. If we only focus on the government's protected areas we can see that four different models coexist in this area. Maderas del Carmen (520,000 acres; 210,526 ha) and Cañón de Santa Elena (693,000 acres; 280,566 ha) are both FFPAs managed by the Mexican central government's National Commission for Protected Areas (CONANP). Ocampo is a new FFPA of 680,000 acres (275,300 ha) that will be declared between them. On the U.S. side, Big Bend National Park (800,000 acres; 323,886 ha) has on its eastern flank the Black Gap Wildlife Management Area (119,000 acres; 48,178 ha) and on the west, Big Bend Ranch State Park (300,000 acres; 121,457 ha), both managed by the Texas Parks and Wildlife Department. Together, all these reserves protect a surface of more than 3 million acres (1.2 million ha).

In addition to these governmental models of land protection, a group of ranchers in the heart of Serranías del Burro in Mexico committed several years ago to the private conservation of its ranches. They formed CONECO (for its acronym in Spanish)—a nonprofit organization—which helped them to address severe environmental threats to their lands. These 17 ranches encompass almost 500,000 acres (202,429 ha) and comprise a conservation success story in and of itself. For example, thanks to the effort of these ranchers the black bear in Mexico has maintained a healthy population and even expanded to its former territories across the border into Big Bend National Park, from which it had been previously exterminated.

Finally, one of the most important stakeholders of the region is CEMEX, the third largest cement producer in the world. This corporation presented a great opportunity to Agrupacion Sierra Madre when they asked us to help them strengthen their commitment to the natural world. In 1995 we presented to them the importance of El Carmen. Today the company owns

The Rio Grande (US)/El Bravo (MX) River cutting through a canyon on the Texas/Mexico border. Photo by Patricio Robles Gil, courtesy of Agrupacion Sierra Madre.

Rock formations in Big Bend National Park, Texas. Photo by Patricio Robles Gil, courtesy of Agrupacion Sierra Madre.

almost 195,000 acres (78,947 ha) inside and outside the FFPA (Maderas del Carmen), and through conservation partnerships manages another 62,500 acres (25,303 ha). Its conservation activities include the rewilding of this sky island through intensive habitat restoration programs, the removal of all fences and cattle, and the reestablishment of big mammals such as the desert bighorn sheep—a flagship species that represents the true historic wilderness. The northern end of this mountain range, bordered by the Rio Grande River and Big Bend National Park, is remote and without human disturbance. Big Bend has struggled to be declared a wilderness area since 1978, when the park staff (concerned by the increasing number of visitors) proposed 79% of the park's surface as a wilderness area. Some local residents opposed the initiative, fearing it would limit tourism opportunities. A strong debate ensued, but the U.S. Congress didn't pass the proposal. However, since then, park administrators have been managing most of Big Bend's area as a de facto wilderness. Years later, the biggest attraction for tourists in Big Bend is its wilderness qualities.

With this northern neighbor and the conditions of isolation and lack of human presence, the northern portion of Sierra del Carmen seemed the perfect place to be designated as wilderness. Hence, we worked with CEMEX's field team and presented the proposal to the CEO for approval. His vision and commitment were tested in this endeavor. But, finally, after consultations with staff and neighbors, the owners made a long-term commitment to wilderness, and approved the launch of the initiative at The WILD Foundation's 8th World Wilderness Congress in Alaska (see *IJW*, December 2005), becoming the first wilderness designation in Latin America. In light of the political situation between Mexico and the United States, this wilderness designation represents an opportunity to strengthen relationships, and, for Big Bend National Park, it supports their dream of declaring a big portion of the park as a wilderness. If so, it would be a transboundary wilderness area of enormous significance for North America.

We had the commitment of land—we now needed the government. We knew there was the opportunity for the Mexican government to embrace the wilderness concept because of the true passion of Ernesto Enkerlin, president of the CONANP, with whom I had a long dialogue about wilderness. He asked me to collaborate with Juan Bezaury, a CONANP advisor and director of environmental policy of The Nature Conservancy-Mexico. Juan explained that if we wanted the initiative to move forward, it should be through an existing scheme of private and social land system certification through which CONANP recognizes landowners' voluntary efforts to protect their lands. His idea was to raise the level of protection for wilderness by creating an official certification or designation.

Under Mexican law, private owners accept certain limits of control over their land that can be imposed by the government or other actors (e.g., road building, mining, fishing in lakes and rivers, water extraction, etc.). Under existing certification, CONANP protects the landowner against government imposition, except min-

Desert bighorn sheep (*Ovis canadensis*), reintroduced to El Carmen area as part of the re-wilding process. Photo by Patricio Robles Gil, courtesy of Agrupacion Sierra Madre.

I'm optimistic for the future, one in which Mexicans will enjoy, respect, and feel the awe of their wilderness areas.

ing and water extraction. The next step Juan envisioned was to have a new certification, one that would be much stronger and would be given by a coalition of NGOs, both national and international, such as Unidos para la Conservación, Pronatura, Conservation International, and The Nature Conservancy, among others, and scientific institutions such as the National Institute of Ecology of Mexico (INE) and the Mexican Commission for the Knowledge and Use of Biodiversity (CONABIO). These would provide both a scientific and ethical component to the wilderness argument that would fight even mining and water extraction.

Therefore, private owners would have three possibilities: (1) the certification of Wilderness Zones by the CONANP, which would give legal protection from certain government agencies and common use by people; (2) the Wilderness Land certification by the NGO coalition for those who don't want any government intervention, but who want to fight to maintain the highest ecological integrity; and (3) both certifications, Wilderness Zone and Wilderness Land, such as in the case of CEMEX's great commitment for the El Carmen

Black bear (*Ursus americana*) are abundant in the El Carmen area. Photo by Patricio Robles Gil, courtesy of Agrupacion Sierra Madre.

One of the interesting parts of this process is the different perceptions shared by the actors involved in the discussions. First, many of them consider the core areas as de facto wilderness without a special name to highlight them. Others think that this scenario could be easily implemented in the north of Mexico where there is desert, and not so easily in the tropical forest communal lands of the southeast, and this became a strong argument of opposition. The fear was also expressed that this new certification would not include important areas of high biodiversity because they were too small, or because they contained existing human disturbance. As a result of the discussions, an additional approach was proposed to address cultural, tribal, and sacred areas. Sharing these different concerns enriched the debate and enlarged the concept, out of which emerged four different certifications within the framework of the CONANP:

1. Natural sacred places: areas with importance for the conservation of biodiversity, which tribal groups have used as a spiritual, magic ritual place.
2. Places with cultural biodiversity landscape: where habitats, biotic communities, and species of flora and fauna have been managed by communities under traditional practices with the understanding of a component of conservation of the native species and exotics that have historical land uses for the sustenance/nourishment of those societies.
3. Places dedicated to long-term scientific research.
4. Areas of almost-intact habitats and biotic communities, where the human footprint or industrial civilization is not present, where human activities are developed without leaving evidence of their presence and that are large enough to enable the reconciliation of humans as a species, with nature.

The steps taken in the promotion of this wilderness initiative in Mexico are parts of a collage. Each piece doesn't make great sense by itself, but when seen together they are much bigger than the sum of the single parts. Many things remain to be done, but we are on the right track. I'm optimistic for the future, one in which Mexicans will enjoy, respect, and feel the awe of their wilderness areas. **IJW**

PATRICIO ROBLES GIL is president of Agrupacion Sierra Madre and Unidos para la Conservation; he is also the series producer for the CEMEX books on nature including *Transboundary Conservation: A New Vision for Protected Areas* (R. A. Mittermeier, C. F. Kormos, C. G. Mittermeier, P. Robles Gil, T. Sandwith, and C. Besançon, CEMEX-Agrupacion Sierra Madre-Conservation International, 2005, published in Mexico.)

A Proposal for a Pamir International Peace Park

BY GEORGE B. SCHALLER

Introduction

From the Pamirs, with their wide valleys and mountain chains, radiate the Kunlun, Hindu Kush, Karakoram, and Tian Shan, four of the highest and most rugged mountain ranges on Earth. The Pamirs lie principally in Tajikistan at elevations of 3,500 to 5,000 meters (11,480 to 16,400 ft.) and more, but they also extend into Kyrgystan, China, Afghanistan, and barely south into Pakistan. The flagship species, the icon, of these uplands is the Marco Polo sheep (*Ovis ammon polii*), first noted by Marco Polo in 1273 when he commented on the "great quantities of wild sheep of huge size" after he found their long, curving horns. With their habitat harsh, remote, and difficult of access, Marco Polo sheep had by the late 1800s become the most coveted of trophies by foreign hunters—and they still retain this almost mythical aura. However, the sheep has decreased greatly in recent decades, as has other wildlife in the region, because of unsustainable hunting by local herdsmen, the military, and others, and there is great need to devise some form of protection for the landscape. An international peace park is one option.

Peace Park Planning

While conducting wildlife surveys in northern Pakistan during the early 1970s, I was told that Marco Polo sheep occur only in two small areas around the Kilik and Khunjerab passes bordering China. Visiting the two sites in late 1974, I found only skulls; the animals, I was told, were now in China. Pakistan established the Khunjerab National Park (6150 km^2; 2,370 sq. mi.) the following year (Schaller 1977). China created the Taxkorgan Nature Reserve in 1984 along the Pakistan border, in effect establishing a transboundary reserve, a designation that was formalized between China and Pakistan in 2000. I checked on the status of wildlife in the Taxkorgan Reserve during the summers of 1985 and 1986. We saw

George Schaller on the Tibetan Plateau.

Marco Polo sheep females and young but no males, and we were informed that at this season many animals are now in Afghanistan and Tajikistan. Realizing that the species could only be adequately protected and managed through transboundary cooperation and joint conservation initiatives, we urged "the creation of one large reserve" that encompasses the four countries and preserves the integrity of the mountain landscape (Schaller et al. 1987).

At the time, Afghanistan was at war and Tajikistan would soon be in turmoil, making it inadvisable to plan projects there. The idea of transboundary reserves was successfully applied in many parts of the world during the following years (Hamilton et al.1996; Sandwith et al. 2001). The purposes of such reserves include cooperation between countries for mutual benefit, better management of joint resources, and encouragement of good neighborly relations through conservation. After nearly two decades, I resumed surveys of Marco Polo sheep, this time in Tajikistan (2003, 2005) and Afghanistan (2004). Having evaluated the situation in these four countries, I can now suggest potential borders for a Pamir International Peace Park (see figure 1).

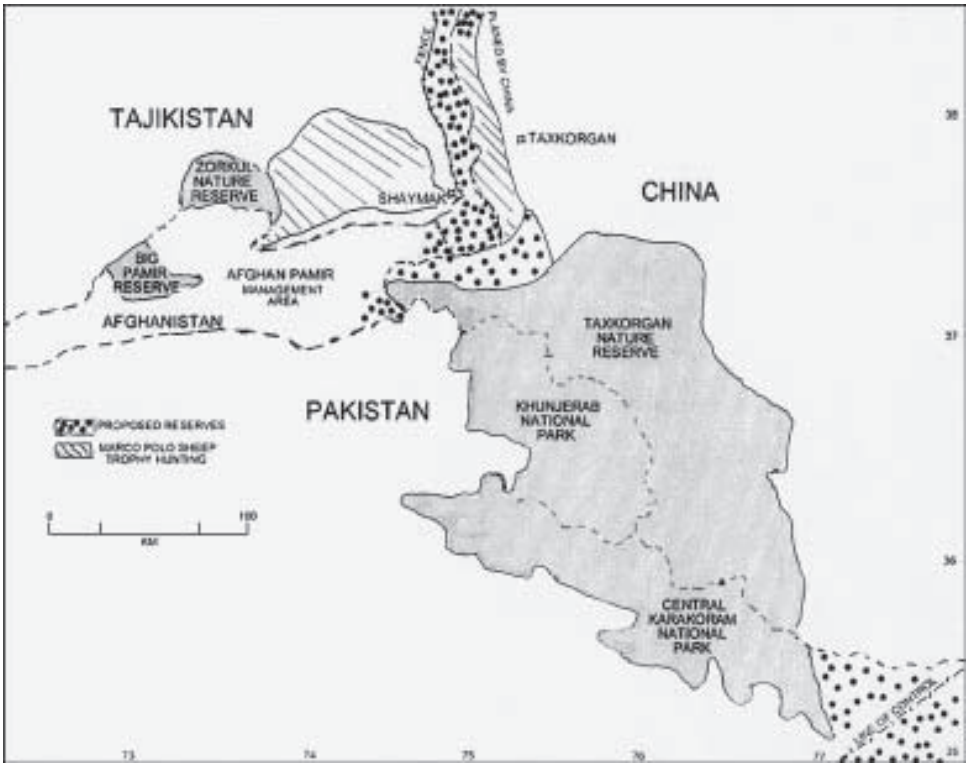


Figure 1—The proposed Pamir International Peace Park along the borders of Pakistan, China, Afghanistan, and Tajikistan, showing existing and suggested protected areas and hunting concessions.

Different levels of protection would apply to different areas of the peace park and include both ecological and cultural considerations: (1) strictly protected areas and other forms of reserve, (2) hunting concessions to help raise funds for conservation and the local communities, and (3) areas in which nomadic herders can maintain their traditional lives. Each country would, of course, decide on the type of zoning that would be most effective and appropriate. Such a peace park would benefit not just Marco Polo sheep, ibex (*Capra ibex*), snow leopard (*Uncia uncia*), and others that travel across frontiers, but all plants and animals, as well as protect the environment upon which local people depend for their livelihood.

Figure 2—The Little Pamir, Afghanistan, looking south toward the Pakistan border and with our expedition yaks in the foreground (September 16, 2004). Photo by George Schaller.

The four countries already have a scattered network of protected areas along their borders, and all of these could be incorporated into a peace park. Pakistan has the Central Karakoram National Park (9738 km^2; 3,760 sq. mi.) bordering the Khunjerab National Park, and both border China's Taxkorgan Reserve. In addition, Pakistan has made a major effort to provide economic incentives to communities promoting sustainable use of natural resources, for example, by sharing entrance fees to parks and trophy hunting fees. Pakistan and India might also become formal conservation partners in a peace park by adding a part of Ladakh adjoining the Line of Control (Raja 2003). Marco Polo sheep do not occur east of Khunjerab National Park, but other mountain species, such as ibex and snow leopard, are found there.

The staff of China's Taxkorgan Reserve also protects some surrounding areas. A small trophy hunting site along the Tajikistan border has recently been expanded, and there are plans to create another protected area in that region; I collaborated in a survey there in 2005.

The Afghan Pamirs (see figure 2) remain currently under the local control of a commander. President Hamid Karzai banned hunting in Afghanistan for five years in March 2005 and established an Environment Department. The Big Pamir Wildlife Reserve (679 km^2; 262 sq. mi.) was designated in the 1970s but never legally established; it was primarily used for trophy hunting until Russia entered the country in 1979. Our 2004 survey found that the reserve still has viable wildlife populations, and we also noted two other areas, totaling 550 km^2 (212 sq. mi.) that are only seldom used by Kirghiz herders and would benefit from reserve status. The rest of the 2500 km^2 (965 sq. mi.) or so of the

Figure 3—The southern Pamirs in Tajikistan with a herd of male Marco Polo sheep (March 5, 2005). Photo by George Schaller.

Afghan Pamirs would need a flexible land use plan that recognizes the stewardship role of the local people.

Tajikistan has a strictly protected area, the Zorkul *zapovednik* (870 km^2; 336 sq mi), along the Afghan border, although actual protection is minimal. East of Zorkul is the Murgab Company, a hunting concession of about 2,200 km^2 (849 sq. mi.). It is the only area in the Tajik Pamirs that has an active guard force, privately funded, and not coincidentally the finest Marco Polo sheep population in the country. Russia built a border fence near the Tajik-China border, several kilometers within Tajikistan (see figure 3), leaving a no-man's-land in which Marco Polo sheep persist and move back and forth into China and Afghanistan (see figure 4). This strip of land requires protected status, especially from border guards who hunt wildlife for food.

These various areas could readily be linked to create a Pamir International Peace Park (see figure 1) of about 50,000 km^2 (19,300 sq. mi.). There is need for a cooperative framework, established at an international workshop, where each country shares information, has a policy dialogue, sets priorities, agrees on principles, and, most important, decides on specific actions. These might include establishing relevant legislation, conducting basic research on wildlife and rangelands, developing joint programs to raise funds from development organizations, creating joint education and training programs, and developing compatible goals for trophy hunting and sharing the economic benefits with communities. My discussions with relevant officials in Tajikistan, Afghanistan, and China elicited positive responses with respect to the creation of a peace park; I have not visited Pakistan so far. The president of Tajikistan, Imamali Rahmanov, has approved a peace park as part of a larger plan for protected areas submitted by the State Committee on Environment and Forestry.

It should be noted that the Tajik National Park in the western Pamirs is not included in the proposed peace park. This large park (26,000 km^2; 10,038 sq. mi.), with a land area covering 18% of Tajikistan, virtually lacks infrastructure, knowledge of status of wildlife, and various aspects of development essential to a functional reserve (see Hamilton et al. 1993). It deserves a major conservation effort in itself.

Marco Polo Sheep Numbers

Management of any resource requires adequate knowledge. Trophy hunters

Figure 4—The Pamirs in China, near the borders of Pakistan and Afghanistan with head of a male Marco Polo sheep about nine years old at time of death (June 17, 1986). Photo by George Schaller.

pay about US$25,000 for killing a Marco Polo sheep in Tajikistan and China, and perhaps Afghanistan at some future date. The income derived from such hunts could contribute significantly to conservation and community development. However, the number of animals must be known, as must the number of trophy-sized males that can be sustainably shot in a population. Furthermore, given intermittent deep snows and droughts, both of which may lead to malnutrition, and the occasional impact of disease, sheep populations need to be monitored to detect major changes. Marco Polo sheep have so far been little studied (Petocz 1978; Fedosenko 2000). Number estimates that have been published are often outdated or of questionable accuracy, and a principal task of a peace park would be to census populations and monitor them (see figure 5).

In the 1960s several hundred Marco Polo sheep frequented Pakistan, but numbers dropped then precipitously due to illegal hunting, especially during the construction of the Karakoram Highway, so that by the end of the 1980s only occasional small herds visited seasonally from China (Rasool 1989). I was told that as many as 120 animals are said to enter Pakistan at present. The October–November 2005 survey in the Chinese Pamirs resulted in a count or 2,175 Marco Polo sheep, indicating a substantial increase during the past two decades of protection. In 1986 Schaller et al. (1987) saw 89 sheep and estimated 150 in the corner of the Pamirs where the four countries meet.

Petocz (1978) censused Marco Polo sheep in the Afghan Pamirs in 1973 and tallied 1,260 animals, but he estimated 2,500 to include those he may have overlooked. Our survey in 2004 revealed that the range of the species had contracted since the 1970s due to unrestricted hunting. We counted 624 Marco Polo sheep, a minimum figure because we did not visit every valley, and, importantly, animals are known to cross the frontier seasonally into Tajikistan and China.

Various counts have been made in Tajikistan since the early 1990s, but these weren't comprehensive. It is believed that a great decline in numbers has occurred since the 1960s. The Action Plan on Conservation (2003) gives a total population figure of 3,000 to 5,400 and Tajik Pamirs (2003) 3,000 to 14,500. In June and July 2003 we censused four blocks of terrain known to have substantial sheep numbers at that season. In three blocks totaling 937 km^2 (360 sq. mi.), sheep densities varied from 0.3 to 0.5 animals/km^2 (0.7–1.3 sq. mi.). The fourth block, comprising 800 km^2 (308 sq. mi.) within the Murgab Company hunting concession had a density of 1.4 animals/km^2 (3.62 sq. mi.). We revisited that hunting concession in March 2005, at a time of year when wildlife had concentrated low on hills to avoid deep snow, and counted 2.7 animals/km^2 (7.0 sq. mi.), partly in the same area we had censused in 2003. Incidentally, the concession prohibits the killing of snow leopards and brown bears, and two of the former were seen during the 2005 census.

The number of Marco Polo sheep in Kyrgystan is unknown. The distinction and geographic separation, if any, between the Marco Polo sheep and the so-called Tian Shan argali (*O. a. karelina*) farther north remains obscure.

Conclusion

There is considerable interest in preserving the ecological integrity of the Pamirs and in promoting development programs there. For example, World Wildlife Fund-Pakistan promoted the idea of a Pamir International Conservancy at a conference in 2003, the Aga Khan Foundation in Kabul proposed a program entitled Pamir Conservation: Pamir Integrated Development in 2004, and Fitzherbert et al. (2003) endorsed the peace park idea. My surveys in the four countries and personal contacts contribute to these preliminary ideas by providing a specific, immediate, and limited goal that would advance the conservation process in a critical area through the creation of a Pamir International Peace Park. The area would also qualify as a Biosphere Reserve. The need now is to transform the concept into action.

Wildlife surveys in the Pamir Mountains of Pakistan, Afghanistan, China, and Tajikistan revealed that Marco Polo sheep (*Ovis ammon polii*) roam back and forth across the frontiers of these countries. There has been a considerable decline of wildlife in recent years. The creation of an international peace park would offer the four countries one option of cooperatively protecting and managing not only Marco Polo sheep and other species, but also the rangelands upon which the livelihood of local peoples depend.

Acknowledgments

Travel was under the auspices of the Wildlife Conservation Society and partially funded by the National Geographic Society. World Wildlife Fund-Pakistan hosted the project in Pakistan; the Institute of Zoology and Parasitology, the State Committee for Environment Conservation and Forestry, and Khujand State University assisted in Tajikistan; the Xinjiang Forestry Department cooperated closely in China; and Minister Ahmad Nuristani and Commander Yakub Khan permitted the project to work in Afghanistan. I would like to express my gratitude to many people,

Continued on page 52

The Global Wilderness Seminar for Government Agencies

A Meeting at the Crossroads of Wildlands Stewardship

BY NANCY ROEPER, PETER LANDRES, and DON FISHER

Two days before the 8th World Wilderness Congress began in Alaska, nearly 200 government wildlands managers from 17 countries met to share ideas about common challenges and to explore ways to improve wildland stewardship globally. The goal for this Global Wilderness Seminar for Government Agencies was to lay the foundation for an operating peer network of government professionals committed to fostering best management practices in wilderness and other wildlands. The seminar, hosted by the Wilderness Policy Council (the group of U.S. federal government policy level representatives from the wilderness management and research agencies) was designed to encourage discussion among the participants with a one-day field trip, presentations from a diversity of countries over a range of topics, and small-group discussions aimed at developing ways to improve global communication about wildland stewardship (see figure 1).

On the first day, participants traveled by train and boat from Anchorage to Seward, and out into Resurrection Bay, to experience a representative sample of Alaska's wildlands. Interpreters and local government agency resource managers pointed out historic, cultural, and ecological highlights, and discussed current wildlands management issues, as participants passed through a mix of private lands, the Chugach State Park, Chugach National Forest, Resurrection Bay State Park, and Kenai Fjords National Park. The many hours of traveling gave everyone an outstanding opportunity to meet one-on-one and in small groups, talk in a relaxed setting, share experiences, and enjoy the spectacular scenery. The high quality interactions on the field trip led Jeff Jarvis, group manager—Wilderness, Rivers, and National Trails with the U.S. Bureau of Land Management, to remark, "This sets a new standard for the wilderness community. What a wonderful way to start the congress, a day with conservationists from around the world, meeting old friends and making new ones, surrounded by this beauty."

The more formal sessions started the next morning with a deeply inspirational talk by Dr. Ian Player, founder of The WILD Foundation. Dr. Player shared stories about his early years as a game ranger in KwaZulu-Natal and spoke movingly about the importance of the human spirit and its connection to wilderness.

Several invited speakers, chosen to represent the diversity of our global community, next demonstrated the commonality of wilderness stewardship concerns across global boundaries and cultures as they discussed some of their country's most pressing wildland resource conservation challenges and creative solutions. For example, discussing their respective wildland challenges, Adrian Stokes (Australia), Liisa Kajala (Finland), and Vicki Sanahatien (Canada) independently highlighted the need for, and the desirability of, working closely with aboriginal peoples. Their respective agencies have realized that as long as people remain connected with their aboriginal homeland, they will be strong proponents for their continued protection as wildlands.

Likewise, Freek Venter (South Africa) and Teresa Magro (Brazil) each addressed the challenges of balancing conservation and

The goal… was to lay the foundation for an operating peer network of government professionals committed to fostering best management practices in wilderness and other wildlands.

Figure 1—Discussion during the Global Wilderness Seminar. Photo by Teresa Magro.

development needs. In both their countries, for example, ecotourism associated with wildlands has provided economic, social, and ecosystem benefits, through the creation of employment opportunities and incentives for wildlife conservation. However, both acknowledged the potential negative consequences associated with growing ecotourism, such as the loss of wildland values resulting from the development of tourism infrastructure, and the importance of thorough planning and collaboration with all interested parties to assure the sustainability of wildlands.

All of the speakers highlighted the need for working with a broad array of partners. Steve Carver (United Kingdom), for example, works closely with several nongovernmental organizations that are attempting to rewild parts of the country. Lisa Eidson (United States) discussed the underlying structure that makes www.wilderness.net, itself a partnership, such an effective information delivery system. As the webmaster, she ensures that a diverse array of users can easily locate the wilderness information they want and need.

In the afternoon, participants divided into relatively small, facilitated groups to allow more focused discussion on specific wilderness stewardship topics. Those topics were: improving global communication for wilderness stewardship, managing for ecological values, managing for social values, meeting the challenge of human use management, protecting the wilderness resource, and partnerships.

Each group identified priority stewardship issues and critical stewardship needs within their focus topic. Not surprisingly, discussions of these broad topics elicited many priority issues and needs, such as:

- Maintaining the natural ecological integrity of wildlands;
- Determining thresholds for wildlands management action;
- Managing user conflicts;
- Educating and informing the public about the importance of wilderness and appropriate ways to enjoy it;
- Bringing funding to the table to generate partnerships; and
- Developing a website for sharing information.

All of the discussion groups independently identified the establishment of a web-based clearinghouse for posting information on wilderness stewardship challenges and solutions as a top priority. Other significant recommendations were to hold smaller or regional international seminars for government agencies between World Wilderness Congresses, maintain accessibility of the World Wilderness Congress to the international community, contribute articles to and subscribe to the *International Journal of Wilderness*, and develop new exchange programs and expand existing ones.

Of the many recommendations developed in this seminar, two resulted in resolutions that were passed by the World Wilderness Congress delegates: (1) hold future Government Seminars to further improve international coordination and cooperation on wildland protection, and (2) develop an umbrella global network to foster international communication and learning about wilderness stewardship.

A list of participants, presentations, small discussion group results, and photos are posted at www.wilderness.net. With support from the U.S. Wilderness Policy Council, the IUCN Wilderness Task Force, and the people who volunteered from these discussion groups to continue working together, we intend to move forward on several recommendations this year to improve our capacity and ability for global wilderness stewardship. **IJW**

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Announcements and Wilderness Calendar

COMPILED BY GREG KROLL

Greg Kroll—New *IJW* Digest Editor

Greg joined *IJW* with this issue as digest editor. He currently works as a private contractor, providing wilderness management training programs in national parks around the United States. From 1996 through 1999 he was the National Park Service representative at the Arthur Carhart National Wilderness Training Center in Missoula, Montana, where he coordinated wilderness training for the wilderness units of the National Park System. From 1985 to 1996, he served as a park ranger at Yellowstone National Park, first as public affairs officer, then as assistant chief naturalist. From 1981 to 1985 he directed two outdoor schools and managed the Summer Field Seminar Program at Redwood National Park, California. Prior to his employment by the National Park Service, he worked for the California State Park System, the California Conservation Corps, and the Annette Island Indian Reservation in Metlakatla, Alaska. Greg is well traveled, having spent time with the National Park Service in Brazil, Costa Rica, Panama, Chile, Argentina, and Bolivia, where he taught ranger skills to park professionals of those countries. He also served as a Peace Corps volunteer in Colombia, South America. Greg is a native of California and earned a B.S. in natural resources conservation and park administration at Humboldt State University, California, and received a master's degree in social work from the University of Washington, Seattle.

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British Columbia Protects Great Bear Rainforest

A wilderness of 4.4 million acres (1.8 million ha) was protected in perpetuity by the provincial government of British Columbia, Canada, on February 7, 2006. Known as the Great Bear Rainforest, this remote and rugged landscape represents a quarter of the world's remaining coastal temperate rainforest, and is home to a healthy population of salmon, wolves, grizzly, and black bears. Under the provincial Park Act, these lands, twice the size of Yellowstone National Park, will remain free of logging and commercial development. An additional 10 million acres (4.05 million ha) outside the protected areas will be managed according to new practices called "ecosystem-based management" that will set limits on logging, mining, and other commercial activities. In what has been described as "a crossroads in our relations," a decade of talks and international boycott campaigns resulted in agreement among First Nations representatives, environmental groups, logging companies, and provincial officials. Merran Smith, of Vancouver-based Forest Ethics, says, "This is a revolution. This rainforest agreement provides a real world example of how people and wilderness can prosper together. And this is just the beginning." (Source: http://www.forestethics.org)

Requests Increase for Helicopter Intrusions into Wilderness

The U.S. Forest Service (USFS) is facing multiple challenges regarding helicopter landings in wilderness and wilderness study areas. The Forest Service's Alaska Region proposes to make approximately 1,100 helicopter

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

landings in wilderness over a 10-year period to inventory vegetation. They want to access 540 plots by helicopter (each plot requiring two landings) and 373 plots by day hiking. The plots are located in 19 wilderness areas on the Tongass National Forest, and one Wilderness Study Area on the Chugach National Forest. The final Environmental Impact Statement on the proposal is due to be released September 2006, at the earliest. (Source: http://a257.g.akamaitech.net/7/257/2422/01jan20061800/edocket.access.gpo.gov/2006/06-1002.htm)

Idaho state fish and game director Steve Huffaker proposes to use helicopters to locate, dart, and radio collar up to 16 wolves in the Selway-Bitterroot, Gospel Hump, and Frank Church-River of No Return Wildernesses. "We need to know how they use a big habitat… so we can trap them if we need to," he was quoted as saying by the *Idaho Statesman*. Forest Service intermountain regional forester Jack Troyer says his agency proposes to help catch the wolves without the use of motorized vehicles, although he still intends to carry out an Environmental Assessment on the state's request. (Sources: http://www.wildernesswatch.org; and *Idaho Statesman,* February 14, 2006)

Finally, the Forest Service is being challenged in federal court over the issuance of a permit allowing increased helicopter skiing in the Palisades Wilderness Study Area (WSA) of the Caribou-Targhee and Bridger-Teton National Forests. A single Jackson, Wyoming-based commercial heliskiing company would have exclusive use of the WSA for up to 1,200 skier-days of service every winter for the next decade. Earthjustice, on behalf of four environmental groups, seeks a court order that would limit the heliskiing to 1984 levels. (Source: http://www.earthjustice.org/news/display.html?ID=1099)

Grizzlies, Bull Trout, Arsenic, and Sinkholes

One of the largest proposed underground mines in North America is also the first to be permitted beneath a U.S. wilderness area. The Rock Creek copper and silver mine, located beneath Montana's Cabinet Mountains Wilderness, was approved in June of 2003 by state and federal agencies. Even though the only surface disturbance would be outside the wilderness boundaries, the mine start-up has been repeatedly blocked by court decisions. First, a U.S. district court judge ruled that federal wildlife officials had put grizzly bears and bull trout at risk by permitting the mine. Then a Montana district judge ruled that the state water-quality permit would allow too much arsenic to be sent into the groundwater, violating the Montana Constitution's guarantee of a clean and healthful environment. Next, by March 2006, two large cave-ins collapsed portions of the nearby Troy mine. In permitting the Rock Creek mine, the U.S. Forest Service stated that the Troy mine provided "an excellent analogy for the proposed Rock Creek mining method and risks of subsidence." Now Kootenai forest supervisor Bob Castaneda admits the two sinkholes will "raise more questions by some people about how well we did the assessment for the Rock Creek mine." (Sources: http://www.clarkfork.org/programs/rock_creek.html, and the *Missoulian,* March 6 and 28, 2006)

New Utah Wilderness Stymies Nuclear Option

As the result of an unprecedented meeting of the minds between the Utah congressional delegation and wilderness advocates, the new 100,000-acre (40,485 ha) Cedar Mountain Wilderness was signed into law by President George W. Bush on January 6, 2006 (P.L. 109-163). The first new stand-alone wilderness designation in Utah since 1984, it was included in the Utah Test and Training Range Protection Act, which was attached to the large Defense Authorization Act. What does wilderness have to do with national defense? A private company seeks to create a high-level nuclear waste storage facility at Skull Valley on the Goshute Indian Reservation, near the Training Range. The protected military airspace above the Cedar Mountains is used by the U.S. Air Force, and the military was concerned that a nearby nuclear waste facility would curtail training operations for safety reasons. The Utah delegation was also uneasy about siting the facility so close to Salt Lake City. The Cedar Mountain Wilderness now prevents the waste storage company from building a rail line to the Skull Valley site. Although waste could still be trucked in, that is a much less desirable option for the company. Less than an hour's drive from Salt Lake City, the Cedar Mountain Wilderness will be a permanent

refuge for mule deer, pronghorn antelope, coyotes, bobcats, golden eagles, and mountain lions, as well as the area's burgeoning human population. (For more information, visit http://www.wilderness.org; and the *Salt Lake Tribune,* December 19, 2005.)

Wilderness on U.S.-Mexico Border Trashed

The Cabeza Prieta Wilderness (803,418 acres; 325,139 ha) is the largest in Arizona. The adjacent Organ Pipe Cactus Wilderness contains 312,600 acres (126,507 ha). Together, they have protected a broad expanse of Sonoran Desert, which has the greatest diversity of plants and animals of any North American desert. They also form the U.S. border with Mexico, and there's the rub. According to the *Los Angeles Times,* these two wilderness areas have suffered a "devastating toll" from the government's ongoing battle with cross-boundary smugglers and migrants. Cabeza Prieta National Wildlife Refuge manager Roger DiRosa claims that 2.5 million pounds of garbage are abandoned in the refuge each year. Sections of Organ Pipe Cactus National Monument (managed by the National Park Service) are so dangerous they are closed to the public. Since the U.S. Department of Homeland Security has legal authority to ignore environmental laws, the U.S. Border Patrol has set up camps in the wilderness, replete with helicopter pads, trailers, fencing, generators and high-intensity lights. Organ Pipe superintendent Kathy Billings is quoted by the *L.A. Times* as saying, "If we lose Organ Pipe and it becomes a moonscape as a result of these impacts, we lose our heritage." (Source: *Los Angeles Times,* March 3, 2006; for specific wilderness area information, visit http://www.wilderness.net)

IUCN Review of Protected Area Categories

The World Commission on Protected Areas (WCPA) of the World Conservation Union (IUCN) has embarked on a process of reviewing the categories included in its Framework for Protected Areas. This could have implications for recognition of wilderness. Wilderness is category 1b, and has been included only since the last revision in 1992, largely as a result of many years of work by the World Wilderness Congress and the tireless efforts of Mike McCloskey, Ed Wayburn, and others. The Wilderness Task Force (WTF)—established within the WCPA in 2001 and co-chaired by Vance Martin (president, The WILD Foundation) and Khulani Mkhize (CEO, Ezemvelo KZN Wildlife, South Africa)—has been asked to submit updated findings on wilderness as a protected area category to justify its continued inclusion within the framework. By the time this issue of the *IJW* is published, that report will be submitted, and further issues of the *IJW* will keep you updated on progress in this regard. For further information, contact Cyril Kormos, WILD's vice president for policy (Cyril@wild.org), or Harvey Locke (strategic advisor, Canadian Parks and Wilderness Society, hlocke@sympatico.ca).

IJW and WILD Awards

Awards were presented by *IJW* editor-in-chief Dr. John Hendee on behalf of the *International Journal of Wilderness* and The WILD Foundation to Drs. Chad Dawson and Alan Watson for their leadership and work with *IJW* and wilderness research and education for stewardship of wilderness resources. An award was also presented to Dr. Stephen McCool for his lifetime of research and educational contributions to wilderness planning and the Limits of Acceptable Change Planning Process. Dr. McCool was the 2004 recipient of the *IJW* and U.S. Forest Service Chief's Award for Excellence in Wilderness Stewardship Research (see *IJW* 11[2]: 29). Steve Bschor (U.S. Forest Service) joined Dr. Dawson in making the presentation to Dr. McCool. All three awards were presented during the October 2005 World Wilderness Congress in Alaska.

John Hendee, Alan Watson, Chad Dawson

Chad Dawson, Stephen McCool, Steve Bschor

Book Reviews

Transboundary Conservation: A New Vision for Protected Areas

By Russell Mittermeier, Cyril Kormos, Cristina Mittermeier, Patricio Robles Gil, Trevor Sandwith, and Charles Besançon. 2005. CEMEX-Agrupacion Sierra Madre-Conservation International, 372 pp., $50.00 (cloth).

Officially released at the 8th World Wilderness Congress in Anchorage, Alaska, *Transboundary Conservation* is another magnificently detailed and illustrated book in the CEMEX Books on Nature series. As in their previous publications, Mittermeier et al. provide a global review of the crème de la crème of conservation areas, this time focusing on transboundary conservation areas (TBCA). The term *conservation area* rather than *protected area* is used in order to allow for the inclusion of areas that may not fit the IUCN criteria for protected areas.

Twenty-eight existing TBCA (out of a potential total of 188 global complexes identified) are reviewed in this book, with half of these TBCA located in the Americas. The introduction provides a history and review of this specific type of conservation area and related areas such as peace parks. The IUCN definition of a TBCA—"an area that straddles one or more boundaries between regions or nations, is dedicated to the protection of biological diversity, and is managed cooperatively through legal or other effective means"—is adopted in this book. Organizations that deal with TBCA, their benefits, and best practices are also included in this section. Some drawbacks and challenges are also noted, but this discussion is not as extensive as the above topics.

Three "exemplary" case studies—the first TBCA of Waterton-Glacier International Peace Park, the Limpopo Transfrontier Park, and the El Carmen-Big Bend TBCA—are the focus of the next chapter, although what makes these three areas so exemplary is not explicitly noted. The basic template of the remaining chapters, which each document one TBCA, is introduced in these case studies: Each TBCA is described by a different author or group of authors, with a focus on listing the most important flora and fauna of each area. Threats to each TBCA are also identified. The exquisite photography provided throughout each chapter on high quality paper must again be noted: These illustrations are worth the price of purchase alone. Each TBCA averages six to eight pages, with half of that being photographs.

Mittermeier et al. have again provided an outstanding overview of a critical conservation issue, using experts in each area to provide a brief but substantive overview of each TBCA. Despite the large number of authors, Mittermeier et al. have done an outstanding job in editing each section, and have once again collected an outstanding series of photographs to help bring each region to life. Kudos must also be given to the publishing trifecta of CEMEX, Agrupacion Sierra Madre, and Conservation International, who have once again spared no expense in creating this illustrated overview of an important global conservation issue. This coffee table book would be an excellent gift for budding or experienced conservationists, but includes enough detailed information to satisfy those wishing for more than just pretty pictures.

Reviewed by JOHN SHULTIS, who is the book editor for *IJW*.

Recommendations and Guidelines for Managing Caves on Protected Lands

Edited by W. K. Jones et al. 2003. Karst Waters Institute (KWI). 95 pp. $16.00 (paper) PO Box 537, Charles Town, WV 25414.

The goal of this publication was to provide federal land managers with guidelines for the development of cave-management plans and policies based on the Federal Cave Resources Protection Act (FCRPA). It is a helpful introduction to cave management (more appropriately, cave stewardship) in the United States, but is far from the definitive text on the subject.

The manual is divided into three parts. Part 1 describes the features to be protected and gives an overview of the science behind management guidelines. Part 2 provides cave stewardship guidelines and describes typical problems in protecting caves and karst. Part 3, the smallest section, outlines management tools and investigative methods. These three sections total 52 pages, 32 of which are devoted to Part 1, giving the impression that cave science is more important than management. The manual concludes with a two-page summary, references,

a glossary of terms, and six appendixes totaling 18 pages. While the National Park Service is well represented in the appendixes, no reference is made to the other federal agencies involved in cave stewardship.

Perhaps because it has multiple authors, Part 1 contains some lapses and contradictions. Greater care in editing could have addressed these problems. For example, it gives the impression that cave management deals only with biophysical cave resources; human dimensions of management are not discussed. It suggests that the FCRPA should also be applied to other natural geologic features, including natural bridges and arches, but this exceeds the scope of the FCRPA. Citations are lacking for much of the information presented in Part 1, a curious fact considering the emphasis on scientific backing for management plans.

As previously noted, Parts 2 and 3 could have been extended. For example, the book would have benefited from examples of cave management plans. The preface indicates that such plans are included in an appendix, but none is provided. Although some of the best texts on cave stewardship are cited, justice is not done to the full value they offer to cave stewards. It might have been useful to summarize guiding principles and concepts, and to provide an annotated list of recommended readings for each subject category. The book does not mention the National Cave and Karst Management Symposia, a valuable resource in this constantly evolving field.

The intent of the publication had been to complement the IUCN's Guidelines for Cave and Karst Protection, which took a human dimensions approach to cave and karst stewardship. Unfortunately, this book falls short of this laudable goal. Perhaps this is, in part, due to KWI's expertise in karst research rather than actual stewardship.

Ideally, the publication should be more in line with the model presented by the IUCN's *Guidelines for Cave and Karst Protection*. A second publication should be developed to cover karst and cave stewardship from a natural resources management perspective. Such a text should cover the biophysical, social, and economic aspects of caves and karst.

Nonetheless, this publication is still an invaluable reference for those federal land managers who know little about cave stewardship. I certainly recommend it as a useful introduction to the subject.

Reviewed by PATRICIA E. SEISER, New Mexico Tech Faculty Adjunct Humanities Department, Socorro, NM. Cave stewardship specialist, National Cave and Karst Research Institute, 1400 Commerce Drive, Carlsbad, NM 88220, USA; email: pseiser@nckri.org.

The Multiple Values of Wilderness

Edited by H. Ken Cordell, John C. Bergstrom and J. M. Bowker. 2005. Venture Publishing, Inc., State College, PA. 297 pp. $49.95 (hardcover).

The three principal authors and editors—Cordell, Bergstrom, and Bowker—are joined by 20 other chapter authors and coauthors. The 13 chapters of the book are presented by leading scholars and researchers on the full range of values held by U.S. citizens toward wilderness and the National Wilderness Preservation System (NWPS).

Chapters 2 and 3 summarize the Wilderness Act of 1964, subsequent wilderness designations, and the development of the NWPS. The formative origins of the wilderness concept were instrumental in evolving a set of wilderness values that were formally stated in the Act. The social and political history of the legislature policy and NWPS set the context to understand the complex public values that led to protection of these natural areas.

The wilderness values framework in chapter 4 is one of the most substantive and important contributions of this book, providing a comprehensive overview of how wilderness attributes and characteristics support wilderness functions and services and lead to wilderness values. The four main perspectives or categories on wilderness values are outlined as (1) social, (2) economic, (3) ecologic, and (4) ethical. These values flow from the attributes and characteristics of the lands within the NWPS that are described in chapters 5 and 6.

The four categories of values are covered in subsequent chapters: Social values are based on concepts of human use and benefits and public perceptions of those benefits as measured by public opinion surveys, with differences analyzed between different demographic and socioeconomic groups (chapters 7 and 8); economic values are conceptually discussed for active on-site recreation and passive uses to measure net economic values and economic impacts on local economies (chapters 9 and 10); ecologic values of naturalness and wildness are described, and indicator measures for research applications are reviewed (chapter 11); and ethical and intrinsic values of wilderness are explored from anthropocentric and nonanthropocentric theory (chapter 12).

The main authors conclude that "it is our view that the values American citizens broadly hold are most important in determining the future of Wilderness. It is the value-laden and diverse voices of our country's public, individually and collectively, that are featured in this book" (p. 270). This book is intended for both the general

public interested in wilderness as well as those already involved in teaching, research, planning, and management. This comprehensive look at the values that brought about the NWPS is an important outline for newcomers to wilderness preservation and an overview and reminder for those already engaged. This book is a must-read for U.S. and international wilderness professionals as well.

Reviewed by CHAD P. DAWSON, *IJW* managing editor.

From PAMIR PEACE PARK on page 44

especially to Major S. Amanullah Khan and Pervez Khan (Pakistan); Talipu, Lu Hua, Li Hong, Shi Jun, and Zhu Fu De (China); Safraz Khan, Muhammad Sidiq, Anthony Fitzherbert, Erin Hannan, Trevor Monroe, Elizabeth Wald, and Scott Wallace (Afghanistan); and Abdusattor Saidov, Tolibjon Khabilov, Otabek and Aidibek Bekmurodi, Eric Engel, Kokul Kasirov, and Neimatullo Safarov (Tajikistan). **IJW**

Figure 5—Female Marco Polo sheep in molt with young (July 15, 2004). Photo by George Schaller.

REFERENCES

Anon. 2003. *The Tajik Pamirs*. Berne, Switzerland: University of Berne, Centre for Development and Environment. Fedosenko, A. 2000. *Argali Sheep in Russia and Adjacent Territories*. Moscow: Center for Hunting Control (in Russian).

Fitzherbert, A., C. Mishra, and A. Khairzad. 2003. *UNDP and FAO: Afghanistan: Wakhan Mission Technical Report*. UNDP and FAO. Hamilton, L., D. Bauer, H. Takeuchi. 1993. *Parks, Peaks and People*. Honolulu, HI: East-West Center.

Hamilton, L., J. Mackay, G. Worboys, R. Jones, and G. Manson. l996. *Transborder Protected Area Cooperation*. Canberra, Australia: Alps Liaison Committee.

Petocz, R. 1978. Management plan for the Big Pamir Wildlife Reserve. Unpublished report. Kabul, Afghanistan: UNDP, FAO, and Ministry of Agriculture. Document No. 7.

Raja, P. 2003. Siachen, peace park or war zone. Mumbai, India: *Sanctuary Asia* 23(4): 24–25.

Rasool, G. 1989: Wildlife in the wilderness. WWF-Pakistan: *Natura* 8(1): 4–6.

Republic of Tajikistan. 2003. *National Strategy and Action Plan on Conservation and Sustainable Use of Biodiversity*. Dushanbe, Tajikistan: National Biodiversity and Biosafety Center.

Sandwith, T, C. Shine,L. Hamilton, and D. Sheppard. 2001. *Transboundary Protected Areas for Peace and Co-operation*. Gland, Switzerland: IUCN, Best Practice Protected Area Guidelines Series No. 7.

Schaller, G. 1977. Mountain Monarchs: *WildSheep and Goats of the Himalaya*. Chicago: University of Chicago Press.

———. 2006. A Proposal for a Pamir International Peace Park. In *Science and Stewardship to Protect and Sustain Wilderness Values: Eighth World Wilderness Congress Symposium*, comp. Alan Watson, Liese Dean, and Janet Sproull. September 30–October 6, 2005; Anchorage, AK. Proceedings RMRS-P-(forthcoming). Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Schaller, G.; H. Li, Talilpu, H. Lu, J. Ren, M. Qiu, and H. Wang.. 1987. Status of large mammals in the Taxkorgan Reserve, Xinjiang, China. *Biological Conservation* 42: 53–71.

The creation of an international peace park would offer the four countries one option of cooperatively protecting and managing not only Marco Polo sheep and other species, but also the rangelands upon which the livelihood of local peoples depend.

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