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The front COVER PHOTO shows the tangled lianas and maquenque palms from the lowland tropical rainforest of Cana in Darien National Park, Panama. PHOTO INSET of a green macaw, from the same national park. Both photos © 2001 courtesy of Alan Watson/Forest Light.

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

Wilderness

It's Got Soul

BY VANCE G. MARTIN

Wilderness raises many questions, a lot of ire, and fuels great debate. For example, the up roar in Congress over proposed oil drilling in the Arctic National Wildlife Refuge (defeated in the Senate by a 54–46 vote) illustrated the divisive views over wilderness protection.

However, most of these Congressmen and women have experienced the grandeur and mystery of wilderness or wild country and might use the word *soul* in describing the effect on them: "It was a soulful experience," "It touched my soul," and so on.

Each of us has no doubt had many such experiences, and these experiences no doubt shaped our decisions to work for the protection of wilderness areas and wildland values. Something deep inside influenced us. We made a *soul* decision!

The *IJW* places value on soul. That's why we lead each issue with a "Soul of the Wilderness" column, inviting a wilderness leader to share more than just his or her logic, but to go deeper into *individual* feelings and experiences, the wilderness issues *he or she* feels are most important, what *he or she* thinks needs to be done, and what *he or she* is doing. In this issue, the soul column is by one of our wilderness *soul brothers* from another continent, Andrew Muir. As executive director of The Wilderness Foundation-South Africa (an *IJW* Sponsor), Andrew has a clear vision for the importance of an African view of wilderness to his region, the value of wilderness experiences for underserved communities in Southern Africa, what needs to be done, and a strategy and programs that his organization and its affiliates are implementing.

But *soul* is not just restricted to the *IJW* article in the "soul" column. We welcome *soul* in other articles too, to tap experiences, feelings, and values behind the information presented—the "soul" of the work—but not to replace rigor, if science and research is the underlying method. Soul is motivation and effect—not method.

Vance Martin, *IJW's* Executive Editor (International) and President of the WILD Foundation at the Conundrum Trailhead, Snowmass-Maroon Bells Wilderness, Colorado.

Many of the articles in this issue are about the experience of wilderness, which can be a soulful experience, as just noted. We cover a wide range—Arthur Carhart; Wilderness Visitor Behavior; National Outdoor Leadership School; Alaskan wilderness; and even web-based wilderness surfing. Also, don't miss our first article from Japan—Finding the Voice of Japanese Wilderness.

Finally, in the tough debate and controversy surrounding wilderness policy, management, research, and advocacy issues, which may find even our wilderness soul brothers and sisters at odds, let's keep two truths close to mind and heart. Remember that the ecological services wilderness provides go to everyone on the planet, regardless of politics, race, religion or environmental disposition. And remember the awesome power of wilderness to touch people, transform their perspective, and inspire understanding of how the world can and should work. Remember that wilderness has *soul*.

VANCE MARTIN is the executive editor (International) for the *IJW*, and, as president of The WILD Foundation, is involved in wilderness conservation efforts worldwide. E-mail: vance@wild.org.

Strengthening Wilderness in South Africa

Strategy and Programs of the Wilderness Foundation S.A.

BY ANDREW MUIR

Over the past two decades wilderness as a protected-area category has continued to gain visibility and momentum worldwide. Encouraging this progress has been the influence of global nongovernment organizations such as The WILD Foundation, Conservation International, recently the Sierra Club foundation, and international organizations like The World Conservation Union (IUCN). The future of wilderness—like that of sustainable development—is critically dependent on the efforts of all such organizations, and the building of broad coalitions of partners among them. Only together can we successfully address issues such as how to integrate the needs for development with conservation of the environment, and to bring into full play the value of wilderness as benchmark and control areas for judging the effects of human development on natural systems.

Andrew Muir, (left) executive director of the Wilderness Foundation, SA, and Vance Martin, president of the WILD Foundation, USA, co-leaders of the 7th World Wilderness Congress. The Wilderness Foundation and WILD are frequent partners in African wilderness initiatives.

South Africa (SA) has been a leader in wilderness conservation on the African continent and is earning respect among developing nations with wilderness. This is in large part due to our wilderness pioneers such as Dr. Ian Player (Player 1995, 1998, Martin 2001), Bill Bainbridge (2001a, 2001b), and others. South Africa is the only African country to make provision for the protected area category "Wilderness Area" (WA) in its legislation. The first areas were protected in the present-day KwaZulu region of Natal Province, being the Umfolozi and St. Lucia wilderness areas established by administrative means nearly fifty years ago (Player 1998). Then countrywide provision was made in the Forest Act to set aside national wilderness areas in the early 1970s. The first areas set aside as wilderness under the Forest Act were the Drakensberg and the Cedarberg Wilderness Areas in 1973.

South Africa is proud of these wilderness accomplishments, coming some twenty years before the IUCN Commission on National Parks and Protected Areas included wilderness as one of the international protected area categories in 1994 (Bainbridge 2001a and b). Related to these wilderness accomplishments has been South Africa's hosting of the first and seventh World Wilderness Congresses in 1977 and 2001, respectively (Player 1978; Martin and Muir 2002).

Greater Equality in Wilderness Appreciation

Although South Africa has led the way in Africa in terms of wilderness conservation, a great sadness is that far more western tourists have been stirred by these wilderness areas and related wild lands than have local black South Africans. The reason for this is that under the previous white nationalist (apartheid) government, black people were excluded and denied access to public nature reserves, picnic areas, and hiking trails. For many black people our protected areas and reserves are not only reminders of discrimination but, in some quarters, hated symbols of painful forced relocations.

Even today, after nearly eight years under the new South African government, experiences in nature reserves are beyond the economic reach of most South Africans. Alarmingly, a South African National Park report confirms that only 4% of the country's black population has experienced protected areas. Because the development of environmental awareness and appreciation for wilderness and nature is largely dependent on personal exposure, it is no wonder that wilderness and nature protection lack the broad public support we would like to have. It is imperative for the future protection and well-being of wilderness and wild lands that a broader spectrum of our citizens, young people, and leaders who shape our society are somehow exposed to these areas and their importance.

The IUCN, the World Conservation Union, recognizes that all protected area-categories, including WA, have a number of common functions globally. These functions include scientific research; protection of species and genetic diversity (biodiversity conservation); protection of specific natural or cultural features; tourism and/or recreation; education; sustainable use of resources from natural ecosystems (e.g., water supplies from mountain catchments); maintenance of cultural/traditional values; and spiritual values. Each country, particularly in the developing world, needs to define its own system of values derived from its own wilderness areas. For example, in South Africa we have too often depended on U.S. literature and debate in this regard and, as a result, are often accused of supporting a North American and eurocentric approach to wilderness and wild land conservation.

Emphasizing African Wilderness Values

Although not advocating reinventing the wheel, I believe that for the wilderness concept to take root in Africa it is important that Africans help define and create the unique values and benefits these areas can have for the continent. Wilderness with unique African values will add strength to the global wilderness movement. Though all of these functions of wilderness are of critical importance for South Africa, four of these benefits are expanded on here to illustrate how we can derive added value from wilderness areas in South Africa.

Figure 1—Baviaanskloof Wilderness Area has been a story of cooperation between private and public organizations, and local community and government. Photo by Vance G. Martin.

1. ***A Focus on cultural and traditional values of wilderness.*** As the birthplace of mankind South Africa and Africa have a rich cultural and human history, with much evidence of this found in wilderness and related wild lands. Wilderness and wild lands give people the opportunity to visit cultural sites (such as bushman paintings and caves) in natural settings and allow these sites to remain intact. Some of these sites are also sacred to local tribes. Tribespeople often have special and traditional relationships with these wild places and, if enlisted sensitively by managers, can

Figure 2—The Baviaanskloof Wilderness is the major water catchment area for the Eastern Cape in South Africa. Photo by Vance G. Martin.

Figure 3—Retired African Game Guards—referred to as "wise men"—are the teachers in the Imbewu program, instilling cultural and environmental values. Photo by Margot Morrison.

add immeasurably to their interpretation and conservation.

2. ***Conservation of ecological services.*** South Africa is a water-scarce country. Protection of high altitude catchments, the headwaters of all the principal rivers of the country, is probably one of the most important of the ecological services provided by the SA wilderness system. For example, the Baviaanskloof Wilderness Complex in the Eastern Cape provides 90% of the drinking water for the Nelson Mandela Metro Area (the vicinity of Port Elizabeth), SA's fourth largest population center.
3. ***Spiritual and healing values.*** Wilderness is the only protected-area category that specifically promotes and requires an experience of nature on its own terms, without intervening technology, and emphasizing a basic enjoyment of freedom, solitude, and spiritual, aesthetic, and mystical dimensions of the natural environment. It also provides opportunities for people to relate to their historic past, and for therapy and healing purposes. For example, specific programs in SA provide wilderness-based intervention and therapy for traumatized youth and young offenders, many of whom are victims of apartheid and an AIDS-era society.
4. ***Tourism.*** Over the past four years tourism has emerged as the second biggest industry in South Africa, and the biggest job generator. Our challenge is to centrally position wilderness as a resource within this industry. In our favor is the fact that the fastest growth in our tourism sector is in the nature-based category. We need a strategy and plan to cooperate with government and private landowners to protect the core wilderness and wild land resources and values, because this is what many tourists want to visit. For example, Kruger National Park wilderness trails (guided wilderness experiences) are booked out 12 months in advance. And these wilderness trails do not interfere with the opportunity for peripheral development, and community co-ownership adjacent to the Park boundary.

Figure 4—The Imbewu Program will take 10,000 black youths from urban townships into the South African wilderness. Photo by Margot Morrison.

The lesson and objective in SA wilderness conservation is clear. We need to develop partnerships with Africans that support indigenous African conservation programs, recognize and build upon local traditions and culture, promote co-management of protected areas on communal land, and build the capacity of the land and resource managers. This process has already begun in South Africa, and some exciting models exist, but we still need to create greater awareness for this work and encourage synergy and partnerships between like-minded organizations and institutions.

Wilderness Foundation Strategy and Programs

The Wilderness Foundation SA is committed to the just mentioned strategy. Our mission is to achieve wider understanding and recognition for the concept of wilderness in SA, in particular, and transfer of our models and programs to other African countries as opportunities arise. To achieve this mission, we have developed programs in six key focus areas: (1) public awareness and information; (2) experiential programs in wilderness; (3) wilderness conservation; (4) manager training and research initiatives; (5) wilderness advocacy; and (6) private sector wilderness. The following includes

a description of one of our projects in each of these six focus areas.

1. Public Awareness and Information

Wilderness Support Groups—the aim of this project, funded by the Sierra Club Foundation (USA), is to create (where required), support, and assist various "friends groups" formed around different wilderness areas across South Africa. The Wilderness Foundation will assist these independent local groups in their role to official management organizations as citizen auxiliaries for their adopted areas. Local knowledge and appreciation for the area is best voiced by these groups, who support and critique the management agencies, and assist in local awareness campaigns.

2. Experiential Programs in Wilderness

Imbewu—this African initiative literally translated means "seed" and is a fully funded, four-day "entry level" wilderness experience (Muir 1999). It is a joint venture between the South African National Parks Board and The Wilderness Foundation. Imbewu enables South African youth, particularly those from previous disadvantaged communities, to reclaim the birthright of a quality experience in their game reserves. One of the unique aspects of Imbewu is that retired black game guards are selected and trained as the Imbewu teachers, many of who cannot read or write, but whom have traditional knowledge of the area that they share with the youth in local languages using the African art of story telling.

Traditional knowledge links wild lands, trees, animals, and birds to the heart of the people (Ramphele 1996). The insight and knowledge of black conservationists, who live and work for a lifetime in the African wilderness, have for too long remained unshared.

Figure 5—Adrian Gardiner (right) officially signs over the servitude to the Wilderness Foundation (SA) for the first privately declared and managed wilderness in Africa. Photo courtesy of the 7th WWC/WILD.

Over 3,000 youth have been through this pilot program in the past 30 months, and we can now see that the Imbewu experience affects the participants at a deep emotional level. The youth experience and begin to appreciate wilderness as irreplaceable and inspirational to the human spirit. Imbewu is environmental education conducted as an empowerment process, instilling personal confidence and identity while rooting nature conservation in an African context. We will expand this program to as many other parks as possible, eventually enabling many thousands of young people to experience their heritage in this way.

3. Wilderness Conservation

The Greater Baviaanskloof Complex is one of South Africa's most important and diverse protected areas. The Wilderness Foundation is working actively with the regional implementing agency (Department of Environmental Affairs and Tourism), in coordinating all the Baviaanskloof stakeholders. This partnership will raise funding and co-manage the project to develop and implement the necessary conservation, local participation, land consolidation, and development planning for this area.

4. Manager Training and Research Initiatives

Wilderness Management Training for wilderness area managers is critical for the protection and sustainability of these areas. The Wilderness Foundation has been involved in sponsoring and facilitating wilderness management training for several years, cooperating with our colleagues in SA's Wilderness Action Group, University of Natal and U.S. wilderness agencies, universities, and the WILD Foundation to ensure that African managers are trained in concepts, theory, and field skills of wilderness management (Weingart 1998; Draper and Watson 2002; Martin and Muir 2002).

A research needs analysis for SA wilderness is currently under way, funded, and managed by The WILD Foundation and the Wilderness Foundation SA, carried out in a partnership with The Aldo Leopold Institute (USA) and University of Natal (SA). Initially the team will analyze 7th World Wilderness Congress papers for wilderness state-of-knowledge relevant to SA; meet with the Wilderness Action Group and others to further identify issues; and with this background will prepare a draft wilderness research needs assessment report for review by peers,

Figure 6—South African wilderness areas are the most secure reserves in all of Africa for the highly endangered rhino and other threatened wildlife. Photo by Salli Randel.

management officials, and others, prior to submission to potential funding sources.

5. Wilderness Advocacy

The Opinion Leaders Trails (OLT), funded by the Green Trust, brings together parliamentarians and key community and environmental leaders on four-day wilderness trail trips. This is a quality experience in the natural environment, facilitating networking among formal and grassroots opinion leaders, and catalyzes an environmental awareness among these policy makers. Over the past seven years more than 200 opinion leaders, including many South African parliamentarians, have participated. It is no small feat to get them to dedicate four days to sleeping on the ground, walking in the bush, and with no cell phones!

Participants on the OLT program consistently comment on how the experience in wilderness created a unique time for much needed debate in an appropriate environment. Judy Chalmers, MP National Assembly, reinforces this in her statement, "The debate was made more real, more urgent, more relevant because we sat in surroundings we could not ignore." Senator Lubidla, MP, commented "We never actually appreciated the environment, and now that we have experienced it we have learnt how vital it is." Many of the participants, including the parliamentarians, had never previously experienced a nature reserve or protected area prior to participating on these trail trips. Some of the participants initially expressed a negative attitude toward formal conservation and saw "brown" environmental issues, such as waste and water and air pollution, as separate and unrelated concepts. After participating on the OLT program, we believe that many of these perceptions changed in a positive way.

6. Private Sector Wilderness

The role of private landowners in conservation in Africa cannot be understated. Only 5.5% of the country falls under the national protected system (and the wilderness component of this comprises only 2.8% of the designated areas), but private landowners account for at least another 6% of the land mass of the country under some form of conservation management. It was announced at the 7th World Wilderness Congress in Port Elizabeth that Shamwari Game Reserve in the Eastern Cape Province of South Africa has created Africa's first privately owned, legal wilderness area of 3500 hectares (see *IJW* Vol. 8, No. 1, April 2002). The mechanism for this protection is through a "legal servitude" to The Wilderness Foundation (SA) that amounts to a conservation easement. We are now implementing a program to teach interested private landowners throughout Africa how to apply this model to their protected lands. We believe this can be another effective way to expand wilderness on the continent.

The Wilderness Foundation and its associates, including the WILD Foundation (USA), have been working around the world for 28 years, and in southern Africa for 40 years. We hope our efforts in this region will be a model for Africa and the world to enhance appreciation for the important link between wilderness, wildlife, and people.

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Trappers Lake and Arthur Carhart

Rocking the Cradle of Wilderness

BY JAMES E. McCOBB

In a clearing on a rise to the left of the Forest Service trail is a small, bronze plaque:

"Cradle of Wilderness … the wilderness concept was born and the principle was first applied in the summer of 1919 at Trappers Lake, White River National Forest, Colorado."

The Arthur Carhart Trail leaves the parking lot at the north end of Trappers Lake, abruptly breaking through the trees at lakeshore to present the startling view of the second largest lake in Colorado. Brilliant blue at midday, the Lake lies beneath a massive trapezoidal mountain. Its top is flat, its sides striated by molten rock flows, its northern side hollowed out by glaciers that created the concavity that suggests a huge amphitheater, hence—"Amphitheater Mountain." "Trapper's Lake," wrote Carhart following his return to the lake in 1928, "is as much of a scenic climax as that last blaring theme of the Pilgrim's Chorus is a climax of music" (Carhart 1932, p. 270).

Carhart Begins His Career

In 1919, Arthur H. Carhart, the first landscape architect to graduate from Iowa State University, recently separated from the Army, found a position with the Forest Service in District 2 headquartered in Denver as "recreation engineer." There he shared an office with another key player in the genesis of the wilderness concept, his supervisor, Carl J. Stahl, Assistant District Forester. Stahl was a warm-hearted, sensitive man who loved the wildlands and had regained his health in the forests. Had Carl Stahl not been an assistant District Forester of District 2 in 1919, comments Carhart, "the wilderness movement might have foundered at its first launching" (1970, p. 1).

James E. McCobb at the Forest Service plaque about Carhart. Photo courtesy of James McCobb.

Carhart's first assignment was to visit forests in Wyoming, South Dakota, and Minnesota including the Superior National Forest. His visit to the Superior was Carhart's first full-scale exposure to wilderness. Carhart returned from his trip expecting to take up work on a master land-use plan for the San Isabel National Forest. Stahl, however, had a different idea because he had been receiving demands for homesites on Trappers Lake, and some persons had already built in the area without permits. He assigned Carhart the task of plotting several sites for homes around the lake and planning a road up the north fork of the White River, around Trappers Lake and Little Trappers Lake, then over the Flat Tops to the Stillwaters on the Yampa River. Carhart requisitioned a plane table and an alidade surveying outfit and boarded a train for Yampa. He found Trappers Lake astounding:

> Whenever a guest stepped out of his junkyard, half canvas shanty, the scene he faced was one of the most magnificent views in the Rocky Mountains; one of the finest on the continent. Across the length of the Lake, Amphitheater Mountain reared its massive beauty in multi-colored grandeur. After I visited Yellowstone Park, seen its famous attractions, after I had heard the eerie call of a loon

Figure 1—Arthur Carhart at his plane table, Trappers Lake, 1919. The photograph is used with the permission of The Library of Western History, Denver Public Library.

> across the darkling waters of Lac la Croix as dusk shaded to starlit night—after seeing these wildland beauties, Trappers still slugged me repeatedly with its surpassing beauty. (Carhart 1970, p. 4).

Two hunters in camp, George Rainey, a well-known big game hunter with African experience, and William McFadden, who had made his fortune in the oil business in Oklahoma, watched Carhart working at his plane table. They asked him to meet, and one evening the three gathered at the table in the cook tent, coffeepot at their elbows, and talked well into the night.

Carhart found himself confronted by a verbal assault. Rainey and McFadden were determined and relentless:

> What the hell do you Forest Service people think you're doing in making a lake like this a shambles, putting summer homes all around it, bringing in a bunch of screaming kids to chop trees with their cute little hatchets? Don't you Forest Service people realize that places are of higher value as they are? Than they could possibly offer after being converted into a resort slum?" (Carhart 1970, p. 41)

Carhart countered with the standard Forest Service argument of the period that the land belongs to the people, and all have a right of access. Rainey and McFadden admitted that everyone had a right to use the land, but, they emphasized, no one has the license to misuse it.

Carhart came away troubled. Still bothered on a later evening, he took the trail along the lakeshore to "Old Man Colby's" cabin that still stands on the east side of the lake. Colby, a veteran of some of the fiercest Civil War battles, had come to Trappers Lake in search of sanctuary; he was a good listener with a reputation for sagacity, someone Carhart must have needed after the horse shedding Rainey and McFadden had just put him through.

Preoccupied by his recent encounter, Carhart continued his way in the silent forest. Suddenly the lake basin seemed filled with eerie whispers. Carhart stopped abruptly looking anxiously about him searching for the source of the soft sound. Just as suddenly as it had begun the sibilance ceased. He took a step forward, and the strange sound returned, swelled, diminished, and in a moment disappeared. Carhart felt himself sharply aware of nature: a light breeze trembled in the trees; pygmy waves lapped at the shore; a gray squirrel scolded him for intruding. Looking back on that experience from the perspective of later life, Carhart wrote:

> That incident at Trappers Lake was in truth a moment when I stepped across a threshold. I discovered true wilderness and reached the conviction that without the sanctuary found in our wildlands, without the experience of living as a part of it, this nation might perish from the earth. (1970, p. 38).

Nothing changed on the surface of camp life. Carhart continued with his mapping, and Rainey and McFadden kept up a steady needling. Trappers Lake continued its quiet reinforcement of Carhart's developing thought:

> Each day I remained at Trappers Lake, each morning, noon and twilight, Amphitheater Mountain rising at the far side of the lake, sometimes draped in wispy fog, sometimes in regal aloofness, the more certain I was that some priceless presence dwelt here, and that haunt of magnificent peace and quietude shouldn't be destroyed to satisfy demands of any one person or ten thousand. A ring of shack cabins around the lake wouldn't be use, it would be misuse. (1970, p. 43)

Discussion on Trappers Lake

Back in Denver, Carhart showed Stahl his maps: where the roads would be and where cabins could be located. "But I'm against it," he told his supervisor. Stahl was silent. Then he began probing at Carhart and digging for answers. Eventually he leaned back: "Maybe we've got something here. Let me talk to the Chief and we'll see"

Figure 2—Old Man Colby's cabin still stands today. Photo by James McCobb.

(Carhart 1970, p. 53). Nothing specific was done as a result of that meeting, no pronouncement was made, but the supervisor of the White River National Forest was quietly informed that cabins would not be built around Trappers Lake.

Toward the end of November, C. J. Stahl stopped Carhart in the hallway outside their office. "I just got back from Salt Lake City where I spoke with Aldo Leopold. He was asking about the Trappers Lake deal. I'll call him to have him come up" (Carhart 1970, p. 61).

Aldo Leopold had rejoined the Forest Service in 1919 following a brief stint with the Chamber of Commerce in Albuquerque. He was appointed assistant district forester in charge of operations on the twenty million acres of land comprising District 3, the second highest position in the District. The chief of operations had three principal tasks: to conduct inspection tours of the individual national forests in the district, to report on his findings, and to recommend changes. One of his first acts was to inspect the ranger stations of the Datil National Forest. His tour of the backcountry provided him the opportunity to fish the headwaters of the Gila River on the southern border of the forest. Soon after he attended the Salt Lake meeting and met Carl Stahl. Stahl reported to the assembled foresters that he had just received a recommendation from one of his assistants that the shoreline of Trappers Lake be kept free of road construction and summer homes and invited comment. When Leopold expressed an interest, Stahl suggested a meeting with Carhart (Meine 1988).

The fateful meeting of Arthur Carhart and Aldo Leopold facilitated by Carl Stahl took place in Denver on December 6, 1919. Carhart and Leopold were both concerned about roads. Carhart commented:

> It should be noted, and noted with emphasis, that in actuality it was the almost blind fanaticism, current at that time, with regard to the building of roads, building them hell-bent and sometimes seemingly recklessly and anywhere, that lit the fuse on the wilderness movement for it was a road built in 1919 that would have brought waves of people stampeding to grab cabin sites around Trappers Lake. Leopold and

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Forest Service Trail No. 1815, which circles Trappers Lake is named the Arthur H. Carhart Trail in recognition of Mr. Carhart's pioneering wilderness concepts. Arthur H. Carhart was born in 1892 and died in 1978.

"The wilderness concept was born and the principle was first applied in the summer of 1919 at Trappers Lake, White River National Forest, Colorado. Assigned to make a survey of the Trappers Lake area to plot several hundred summer home sites on the lake shore and to plan a 'through' road around the lake, Carhart completed the surveys pursuant to his instructions, but made it known to his immediate supervisor that he opposed further 'Improvements where natural landscape would suffer.' After some discussion the Denver District Office of the Forest Service agreed that the Trappers Lake area should remain roadless, and that the many applications for homesite permits around the lake should not be honored. That was an unprecedented step in Forest Service history."

Quoted from the *Quiet Revolution* by Donald H. Baldwin.

Figure 3—Trappers Lake, Colorado, in 2001. Photo by James McCobb.

> associates were terribly worried over a road that an influential rancher wanted built through a part of the forest that later became the Gila Wilderness. (Carhart 1970, p. 63)

The exchanges among the three: "focused on policies governing human use of the wildlands, and particularly the Trappers Lake program. (Carhart 1963).

The historic memorandum of the meeting written by Carhart is dated December 9, 1919. Three major points are made: (1) the inherent task of the Forest Service in its role as steward is to preserve wilderness for its scenic beauty and for recreation; (2) with regard to land use, there is a definite point where all man-made improvements should stop; and (3) to maximize the appropriate use of the forests, a system of zoning should be developed that will determine recreational activities appropriate to places of differing scenic value (Carhart 1919). The three foresters left their meeting to trace out, each in his own way, the implications of their shared vision.

Beyond Trappers Lake

Carhart and Stahl reprised their Trappers experience over the Superior National Forest. Carhart wrote a comprehensive recreational plan for the Superior in 1921. Included in his report was the recommendation that the road from Ely, Minnesota, along the Kawishiwi River, should not be built even though funds had already been allocated. Stahl endorsed Carhart's recommendation and withheld the $53,000 (Baldwin 1972).

That same summer, Carl Stahl published an article in *Journal of Forestry:* "Where Forestry and Recreation Meet," in which he asserted that forestry and recreation do not so much meet; they co-exist. Stahl concluded that the positive influence of forests on the health and strength of the citizenry should be given emphasis equal to profit-making purposes. He had no doubt the Forest Service had the responsibility to manage recreation in the forests. As a way of responding to the escalating annual numbers of visitors, Stahl pointed to zoning on the San Isabel Forest under a plan devised by Carhart that confined summer homes to designated areas (Stahl 1921).

In the summer of 1921, Leopold paid a second visit to Carhart who was in the process of writing his report on the Superior National Forest when Leopold stopped in. The two men discovered that they had arrived at nearly identical conclusions. "Leopold was particularly interested in saving the best of the remaining wilderness areas. I talked of the dominant use principle, and wilderness set aside to preserve its values was an application of that principle" (Baldwin 1972, p. 155). In the fall of 1921, Aldo Leopold published his well-known piece: "The Wilderness and Its Place in Forest Recreational Policy" in which he defined wilderness as "a stretch of country preserved in its natural state … big enough to absorb a two weeks' pack trip and kept devoid of roads." He went on to propose the Gila Wilderness (Leopold 1921, p. 718). Implicit in Leopold's argument are the three fundamentals: responsibility for wilderness belongs to the Forest Service; there is a point at which burgeoning civilization must stop its invasion of the natural world; and managing the forests for recreation requires zoning certain sections for activities appropriate to the specific environment.

As he looked back over the events of the 1920s, Carhart suggested that the wilderness idea rose from a synergy experienced by him and the other actors in the drama:

> I believe all of us who had any part of [the struggle to preserve wilderness] at any degree in relation to any wildland values that existed,

I believe all of us who had any part of [the struggle to preserve wilderness] at any degree in relation to any wildland values that existed, reacted and were guided by instinct or intuitive forecast of what might be happening to some of these places which in themselves were sanctuaries to which man might go and find the peace that originally and always dwelt there.

> reacted and were guided by instinct or intuitive forecast of what might be happening to some of these places which in themselves were sanctuaries to which man might go and find the peace that originally and always dwelt there. Certainly, for my part, I claim no special distinction because of what was said and done with regard to Trappers or of what followed it. It was all so evident, so right, that all of us who were moving in this period certainly had the feeling that what must be done was done for some reason that was deep inside of us.
>
> And one more thought. Had there not been at that time the application, the acceptance of the concept of protecting such sanctuaries in wildlands, established in the case of Trappers Lake and followed also certainly by the establishment of the Gila Wilderness Area and the Border Lakes Canoe Area, there would have been no such protection as we have attained (Carhart 1970, p. 64)

The Carhart Trail around Trappers Lake is not heavily traveled. The hiker is on his or her own fording creeks and crossing marshland; Colby's cabin still stands in the meadow on the east shore; no homesites have been developed; and the camping areas are not visible from the lake. Civilization has restrained its proclivity for improvement. The silence of the forest, the sound of waves lapping the shore, the clear blue lake reflecting the sky, the awesome beauty of Amphitheater Mountain still provide sanctuary to the seeker. The scene is still "one of the most magnificent views in the Rocky Mountains"(Carhart 1970, p. 34).

That the Forest Service should designate Trappers Lake as "the cradle of Wilderness" is a fitting tribute. The first stirring of the wilderness idea was felt there when, over coffee in the cook tent, two hunters in love with Trappers made a verbal assault on a young forester. The idea took shape along the path to Colby's cabin when pygmy waves lapped the shore, and a gray squirrel scolded the intruder. In a magnificent moment in 1919 the idea took on actuality when three dedicated foresters found that they shared a revolutionary concept of how wildlands should be managed. The movement to preserve and protect the wilderness sanctuaries of our time owes its existence to them—but not only to them—to Trappers Lake as well. The Cradle of Wilderness is there.

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Wilderness in Alaska

Is it Exceptional?

BY GREGORY BROWN

Introduction

The common idiom that Alaska is "the last frontier" suggests that the relative remoteness and unsettled character of Alaska create a unique Alaskan identity, one that is both a "frontier" and the "last" of its kind. The frontier idiom portrays the place and people of Alaska as exceptional or different from the places and people who reside in the lower 48 states, especially in regards to human perception and interaction with the surrounding landscape.

Cuba (1987) described how the forces of migration and mobility have served to reinforce and strengthen Alaska place identity among its residents. Symbolic images of a wild Alaska frame the expectations of migrants to Alaska with some migrants identifying themselves as different from other people (e.g., more adventurous or more independent) even prior to moving to Alaska. Once migrants arrive, they establish and perpetuate an identity based on comparative experiences with the world "outside" Alaska. The constructed Alaska image is one where the people are friendlier; more independent, economic opportunities are greater and more challenging; and its government more accessible and immediately felt. The distinctiveness of Alaskan life is reinforced through travel to the contiguous United States where friends, family members, and even strangers expect them to display visible signs of their Alaskan experiences. Indeed, some Alaska residents begin to think of themselves as Alaskans only after they travel outside of the state. As Cuba noted, "residents of Anchorage assume a frontier mien because it is expected of them" (1987, p. 165).

Article author Gregory Brown.

But the construction of an Alaskan identity is not purely symbolic. The meaning of place is derived through everyday, local interaction and cannot be separated from its location. Accordingly, "the content of the Alaskan place identity is anchored in the particulars of place" (Cuba 1987, p. 170). In other words, it is the subjective response of Alaska residents to the place of Alaska that constructs and reinforces the image of Alaska as exceptional or different.

In his analysis of Frederick Jackson Turner's frontier thesis, Cuba (1987) wrote that Turner actually references three distinct types of frontier: (1) as a geographic territory with identifiable physical characteristics (e.g., "the margin of settlement which has a density of two or more to the square mile"), (2) as set of social conditions resulting from human interaction with the environment (e.g., "a form of society"), and (3) a subjective response to place that includes attitudes, beliefs, and values (e.g., "a state of mind"). Thus, the concept of "frontier" is an ambiguous one without reference to the definitional type of frontier. With respect to Alaska, Cuba believed that Alaskans, particularly residents of Anchorage, have adopted a frontier "state of mind" that is quite far removed from a daily routine that requires coping with primitive living conditions.

The adoption of a "frontier" state of mind stands in stark contrast to the realities of everyday life (social conditions) for the majority of Alaska residents. Historian Stephen Haycox (1999) noted that the majority of Alaskans live in what he terms a "replication corridor" consisting of a narrow strip of human habitation that mirrors urban conditions found outside Alaska. Here, life in both the large and smaller urban centers is nearly indistinguishable from life in cities and towns across the western United States. Residents can access all the amenities, conveniences, and comforts of urban life found elsewhere in America. Haycox believes Alaska's replication corridor "manifests little that is different from the American West" despite its more remote location

and the potential within it for an embrace of wilderness values. For Haycox, the culture where the majority of Alaska residents live does not support the Alaska exceptionality hypothesis, at least with respect to the set of "social conditions."

The concept of "frontier" is predicated on contrasting images—civilization versus wilderness, urban versus rural life, and conformity versus individualism. Without the concept of "wilderness" there would be no "frontier." The argument set forth here is that the concepts of wilderness and frontier are derivatives of each other and share the same basic typology and conceptual ambiguity. Like the frontier, wilderness may alternatively be conceived of as a geographic territory (e.g., an area within the National Wilderness Preservation System), as a set of social conditions (e.g., a subsistence lifestyle), or as a state of mind (e.g., a natural or pristine area). These three concepts of wilderness are described and followed by a discussion of the exceptionality argument.

Wilderness as "Exceptional" Geographic Territory

Since passage of the Wilderness Act in 1964 (Public Law 88-577), substantial additions have been made to the National Wilderness Preservation System (NWPS) in Alaska. Most of the Alaska wilderness acreage was identified in 1980 with passage of the Alaska National Interest Lands Conservation Act (ANILCA) (Public Law 96-487) that added over 56 million acres to the NWPS. Alaska now has more than 58 million acres of wilderness in 48 units located in National Wildlife Refuges, National Parks, and National Forests spread from the extreme southeast (Tongass National Forest) to the Arctic Coast (Arctic National Wildlife Refuge). Over 55% of the entire NWPS acreage is located in Alaska, and Alaska wilderness has more land area as a percentage of total state land (15.4%) than any other state (Landres and Meyer 2000). The largest wilderness unit in Alaska is the Wrangell-St. Elias Wilderness at 9.7 million acres, and the smallest unit is the Hazy Islands Wilderness at 32 acres.

The geography of Alaska wilderness appears exceptional from an ecological perspective. Alaska is dominated by the polar ecosystem (Bailey 1980) with tundra and subarctic divisions defining the largest area of land. The tundra climate is characterized by very short, cool summers and long, severe winters. Polar ecosystems contain vegetation dominated by grasses, sedges, lichens, and willow shrubs. Subarctic ecosystems are shaped by a climate with great seasonal range in temperature, severe winters, and small amounts of annual precipitation concentrated in the three warm summer months. Subarctic vegetation is dominated by the boreal forest. These tundra and subarctic areas compose approximately 14.5% of the total land area in the United States (Bailey 1980). The other ecosystem division present in Alaska is the "marine" division that shares some characteristics with coastal areas in the Pacific Northwest. The marine ecoregions occupy a relatively small land area in the United States (3.7%) along the Pacific coast. These ecosystems of Alaska support abundant populations of faunal species not found elsewhere in such large concentrations including brown and black bear, caribou, and moose.

Figure 1—The vast expanse of Alaskan wilderness is difficult to access and many visitors use commercial operators that provide transportation services into remote glaciers and mountains like those in Denali National Park. Photo courtesy of Paul Roderick, Talkeetna Air Taxi.

Alaska contains relatively few public roads for its size, a total of 12,686 miles of roads. Only the smaller states of Hawaii (4,257), Delaware (5,748), and Rhode Island (6,052) have fewer road miles, but with significantly higher road densities.

Figure 2—Many tourists to Alaskan wilderness will only visually access the wilderness from the cabin of a airplane, the deck of a cruise ship, or as a distant mountain range as seen from the few roads in Alaska. Photo by Chad Dawson.

Thus, from a size and ecology perspective, the geographical territory of wilderness in Alaska is "exceptional" from that found in the lower 48 states.

Wilderness as Social Conditions

Are social conditions surrounding Alaska wilderness more primitive or wild than in the lower 48? The population of Alaska, like many western states, is urban with over half the statewide population of 627,000 living in Anchorage or the nearby Matanuska-Suisitna Valley. Alaskans who live in the "replication corridor" are not self-sufficient in the frontier sense, many holding jobs in the service or government sectors of the economy. These people live ordinary lives and are accustomed to all the conveniences and nuances of modern, nonwilderness living that are nearly indistinguishable from cities and towns in the lower 48. The much touted "higher cost-of-living in Alaska," a general characteristic of frontier geography, has largely faded, at least in the "replication corridor" through efficient transportation and distribution channels. As Haycox (1999) wrote, "in the human culture of the replication corridor … there is little to distinguish the places as Alaskan."

The "primitive" living conditions, generally associated with a frontier and wilderness existence, are absent in the replication corridor although primitive conditions continue to exist in rural or "bush" Alaska. For example, 89 of the 192 Alaska Native villages do not have water piped or trucked to homes. But for most Alaskans, water, waste, and health conditions are similar to those found elsewhere in the United States.

And yet, even in the area of social conditions, one could argue, perhaps unconvincingly, that small things in Alaska add up to "differences" in social conditions. Anchorage is the only large urban area in the United States where mega fauna such as moose and bears co-exist, uneasily at times, with urban residents. Anchorage is the only major city with a 500,000-acre state park (including wilderness) located within its municipal boundary. Alaska has a relatively high population (98,000) of American Indian and Alaska Natives whose unique and traditional culture continues to color the lives of Alaskan residents.

I have raised the supposition that Alaska wilderness is exceptional—its unique geographical and historical context resulting in a different subjective response to wilderness among Alaskans.

Wilderness as a State of Mind

If wilderness is a social construct as Cronon (1996) and others suggested, the Alaska wilderness exceptionality hypothesis would posit that Alaskans perceive and value wilderness differently than other U.S. residents in the lower 48. How do Alaskans perceive their wilderness landscapes compared to those outside? Ideally, one would construct a study to measure wilderness perceptions and values, sampling both Alaska and outside residents utilizing commonly recognized wilderness themes and places. Although this type of data is not currently available, a comparison of national wilderness values (Cordell et al. 1998) with landscape values from a study of the Chugach National Forest in Alaska (Brown and Reed 2000) provides a starting point for examining similarities and differences in perceived wilderness values.

Alaska residents appear to hold a more instrumental view of wilderness in Alaska (Brown 2002). Wilderness is a place to use, recreate, and explore, not a place to be left alone. Alaskans recognize the economic value of wilderness from a tourism perspective and fully expect that the landscape will be exploited for its tourism potential. Alaskans also acknowledge the extraordinary scenic beauty of the landscape and place a high value on aesthetics.

One important area of agreement between Alaska residents and those outside is the importance of wilderness to sustain life—as a source of clean air and water, and as a repository of biological diversity. These values ranked high with both Alaska residents and U.S. residents living outside Alaska.

In an analysis of the spatial location of landscape values, Alaska residents identified proportionately more aesthetic, economic, historic, and subsistence values outside recommended wilderness areas whereas more life-sustaining, intrinsic, spiritual, and future values were located inside wilderness study areas (Brown 2002). The values inside wilderness study areas roughly correspond to values associated with indirect, intangible, or deferred human use of the landscape whereas values outside the area roughly correspond to direct, tangible, and immediate use values of the landscape.

The Case for Alaska Wilderness Exceptionality

Is Alaska wilderness exceptional compared to other wilderness in the NWPS? In support of the argument, one could point to the tangible differences between Alaskan wilderness and that found in the lower 48: (1) wilderness areas in Alaska are significantly larger and less fragmented, (2) wilderness areas are located in ecoregions not found elsewhere in the NWPS, (3) wilderness areas receive significantly more subsistence use by both Alaska Natives and rural residents, (4) wilderness areas are the destination of a large and growing "ecotourism" market, and (5) wilderness in Alaska is managed by a set of legal guidelines from ANILCA (1980) that provide a series of legal "exceptions" to wilderness management such as the construction and maintenance of cabins, the use of motorized vehicles such as snowmobiles, motorboats, and aircraft, and temporary fishing and hunting camps.

To refute the exceptionality argument, one could point to technology such as the airplane, helicopter, or snowmobile that negate size and scale differences in wilderness areas. The scale of the landscape may be larger, but technology can greatly diminish the physical challenges required to access wilderness areas. Regarding the exceptionality of wilderness management, one can point to other wilderness areas in the NWPS that contain ANILCA-like management exceptions such as the use of airplanes in the Frank Church River of No Return Wilderness in Idaho.

If the physical size, location, ecology, and management of Alaska wilderness appear exceptional, what can one say about the social construction of the wilderness concept in Alaska? Alaskans perceive themselves to be exceptional even if the social conditions (at least within the replication corridor) appear unexceptional. Alaskans hold higher instrumental values (e.g., subsistence, recreation, and economic) toward the landscape, influenced to some extent, by the concept, culture, and history of subsistence in Alaska. Even as the physical necessity of subsistence hunting and fishing diminishes in postmodern Alaska, the culture of subsistence as a surrogate for Alaska Native rights and land access increases in importance. For rural and Alaska Natives, the land is a place that provides sustenance (even if only symbolic) for survival.

The Alaska Native view and the Western concept of wilderness clearly

Figure 3—The Alaskan wilderness experience includes many references to and stories of winter travel. Photo by Chad P. Dawson.

Like the frontier, wilderness may alternatively be conceived of as a geographic territory, as a set of social conditions or as a state of mind.

diverge (Ongtooguk 2002). Visitors to Alaska appear disappointed to encounter Alaska Natives living in so-called wilderness areas, a situation that appears contradictory to the 1964 Wilderness Act. For Alaska Natives, the landscape is home, a land to be respected but equally important, a land to be utilized. But for Alaska urbanites and visitors to Alaska, the landscape is valued as a place to recreate and enjoy the scenic beauty rather than as a place for permanent habitation or resource exploitation. This romantic view of the landscape is more consistent with the Western "received" idea of wilderness whose ideals are embodied in the 1964 Wilderness Act (Callicott and Nelson 1998).

Thus, there is a paradox of the wilderness idea in Alaska, and it pertains to the Alaska exceptionality theme. Migrants (and visitors) to Alaska, particularly new professional migrants, are attracted to Alaska for the Western "received" idea of wilderness, as one of the last places where the landscape is largely pristine and empty. Over time, migrants to Alaska embrace the exceptionality of Alaska wilderness. They acknowledge that Alaska wilderness is not, in fact, the "received" idea of wilderness as experienced in the lower 48, but rather wilderness that is a living and working wilderness. People come to Alaska as wilderness purists and evolve into wilderness pragmatists. The enormity and challenges of the Alaska landscape mollify the purist wilderness ideals of newcomers and visitors. Airplanes, helicopters, and snowmobiles become the pragmatic tools of the Alaska wilderness user and reinforce the exceptionality of Alaska wilderness in the NWPS.

I have raised the supposition that Alaska wilderness is exceptional—its unique geographical and historical context resulting in a different subjective response to wilderness among Alaskans. The data in support of the supposition is limited and would benefit from further research. Specifically, it would be beneficial to compare the values and attitudes of Alaskans and non-Alaskans directly using the same measurement scales. It would be beneficial to apply wilderness "purism" scales to selected resident populations in Alaska to compare with Alaska visitor ratings. And it would be beneficial to closely examine ethnic groups that have migrated to Alaska to determine if their ethnic culture bonds have been modified or become "exceptional" in Alaska.

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PERSPECTIVES FROM THE
ALDO LEOPOLD WILDERNESS RESEARCH INSTITUTE

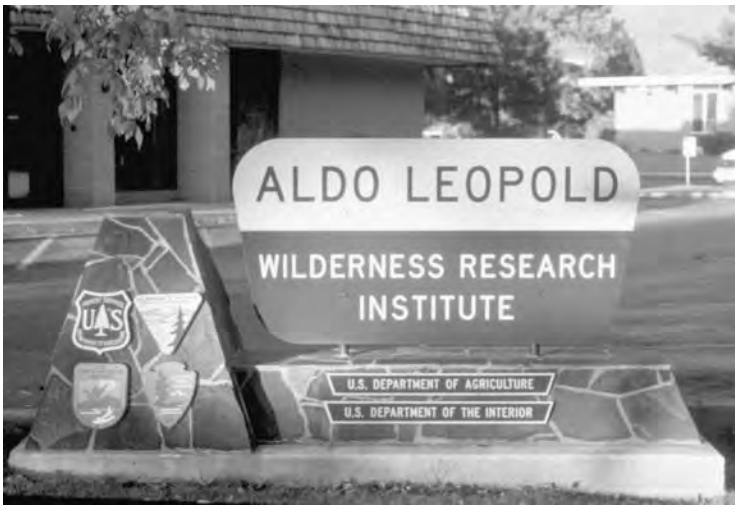
Understanding Wilderness Visitor Experiences

BY BRIAN GLASPELL

Understanding the nature of human experiences in wilderness is a priority research issue at the Leopold Institute. Past investigations have typically focused on measures of solitude, such as perceived crowding, or other experience dimensions derived from the Wilderness Act. These studies have provided useful information, but they do not capture the full meaning or significance of the experiences sought and received by modern wilderness visitors.

Much has changed since the Wilderness Act was debated and finally passed in 1964. The spectrum of places now protected in the National Wilderness Preservation System includes urban proximate lands threatened by high visitor use, and vast, remote landscapes where nearby residents still practice modified subsistence lifestyles. Wilderness visitors may come seeking solitude, but they may also seek and find an array of other experiences. It is apparent that no generalized understanding of wilderness experience, nor any single approach to management, is sufficient to recognize and protect the diversity of wilderness experience opportunities. Expanded research approaches, including efforts aimed at gathering in-depth, site-specific information, are needed to further our understanding of wilderness visitor experiences and ensure that unique opportunities are protected.

Recognizing this need, scientists at the Leopold Institute have reinvigorated their efforts to understand wilderness experiences. One example of this initiative is an ongoing, multiphase research project at Gates of the Arctic National Park in northern Alaska. In a series of in-depth interviews conducted during the summer of 2001, we found that visitors to Gates of the Arctic described their experiences in terms that reflected some of the central themes



from the Wilderness Act. However, they also described other, locally significant dimensions related to high-latitude weather and light conditions, evidence of the human history of the arctic, opportunities for discovery, and opportunities to practice and witness wilderness stewardship. The next phase of our research will involve measuring the distribution and saliency of these experience dimensions across the Gates of the Arctic visitor population.

Results of this research serve two purposes. First, they contribute to scientific understanding of the myriad ways that people relate to and experience wilderness settings. Second, they will be useful to Gates of the Arctic managers, who are just beginning a revision of their wilderness management plan. We identified unique values of Gates of the Arctic that may help managers consider their decisions in the context of other regional and national protected

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Comparing the Effectiveness of Interpretive and Sanction Messages for Influencing Wilderness Visitors' Intended Behavior

BY GARRETT S. DUNCAN and STEVEN R. MARTIN

Abstract: A laboratory experiment was designed to compare the effectiveness of sanction and interpretive written messages for influencing wilderness visitors' intended behavior. Questionnaires were presented to 237 people assigned to one of three treatments (control, sanction, or interpretation). Each viewed a series of slides of a hypothetical wilderness outing. Sanction and interpretation groups viewed signs containing messages interspersed in the slides; the control group viewed no such messages. Participants responded to written scenarios and indicated the likelihood that they would perform certain behaviors. In three of the four scenarios the interpretation message was as effective as the sanction message at eliciting intentions to perform desired behaviors and not to perform undesired behaviors; both were more effective than no message. In the fourth scenario, the interpretation message was more effective at eliciting the desired response than the sanction message, which was in turn more effective than no message.


Article co-authors Garrett S. Duncan (left) and Steven R. Martin.

Introduction

Many land management agencies in the United States use interpretation to help accomplish resource management objectives. Interpretation is described by Knudson et al. (1995) as a method of communicating the significance or meaning of something in a way that instills understanding and appreciation. Interpretive communication may be personal (e.g. on-site naturalists) or impersonal (e.g. signs, brochures, or exhibits), and may use images, analogies, metaphors, or stories to explain the significance of natural resources or cultural events, or to present the rationale behind management policies or regulations.

(PEER REVIEWED)

Agencies commonly rely on plea and sanction messages to promulgate regulations. A sanction, as used here, is defined as threatening a penalty (usually a fine) for behaviors considered inappropriate by the managing agency. Commonly used sanctions are, in certain situations, effective for visitor management. Gramann et al. (1995) found that participants reported stronger intentions to obey a rule if they were aware of the sanction for violating that rule. Johnson and Swearingen (1992) reduced off-trail hiking by 75% with a threatened sanction sign at Mount Rainier National Park. Of the signs they tested, the sanction message was the most effective. Martin (1992) reduced pumice collection at Mount St. Helens National Volcanic Monument by 97% with a simple sanction sign.

Providing the reasons for a regulation is almost always more effective than simply stating the rule (Ham 1992). Interpretive messages can explain the rationale behind management regulations and the necessity for them without threatening a penalty for noncompliance. Interpretation can protect the resource by increasing the visitor's awareness of its value, of behavior that degrades the resource, and of damage that occurs with improper actions (Dame 1985). Vander Stoep and Gramann (1987) evaluated the effectiveness of written interpretive messages at the Shiloh National Military Park in reducing damage by youth to cultural resources such as cannons, statues, and monuments. They found that even the most basic design of the three tested was effective in reducing depreciative behavior.

Oliver et al. (1985) found a brochure successful at reducing littering and tree damage impacts at campsites. The brochure contained sketches and verbal messages explaining to visitors which behaviors were destructive, the effects of these behaviors, the costs of rehabilitating damaged campsites, and ways that visitors could help protect the campground and camping experience. The brochure-only treatment reduced the percentage of camping groups that damaged one or more trees from 39% to 20%, and reduced the percentage of groups leaving litter from 82% to 67%.

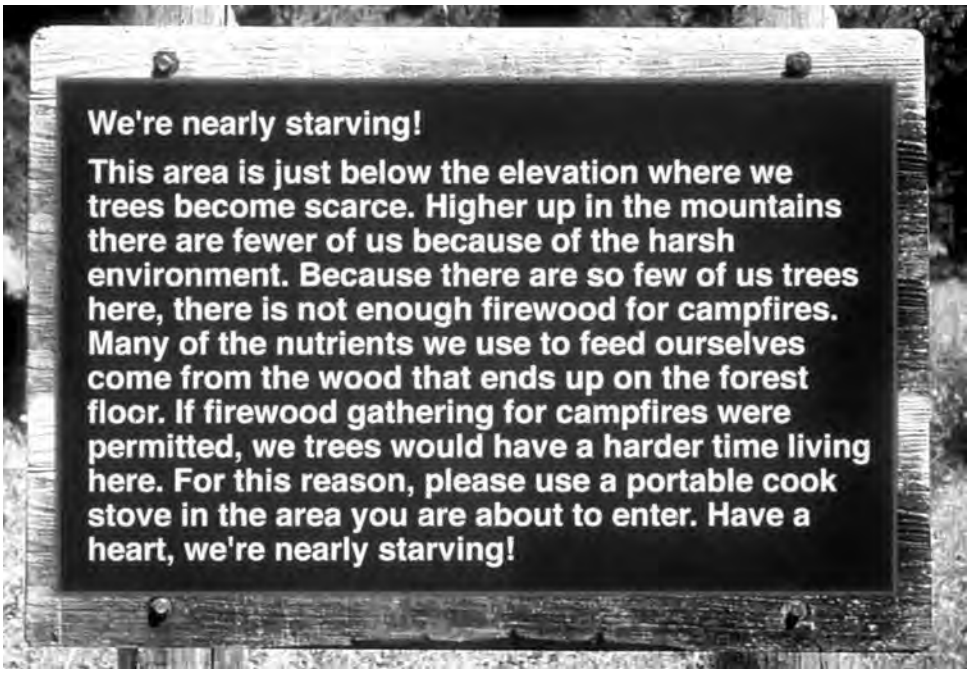

Figure 1—Campfire interpretation sign seen by subjects in slide presentation.

Gramann et al. (1995) exposed participants to what they called an "awareness of consequences" (AC) message, which included the reason for the rule and the negative consequences to the resource or other visitors of not obeying the rule, but no mention of a sanction. They found that AC participants were significantly more likely to indicate that they would obey the rule than participants who did not receive this message.

Widner and Roggenbuck (2000) tested the effectiveness of three interventions designed to reduce theft of petrified wood at Petrified Forest National Park. They found that there was no significant difference in effectiveness among a signed pledge, an on-site ranger, and "a theory-based, well-written, and well-designed interpretive sign." The interpretive sign was as effective as the on-site ranger at a fraction of the cost. The interpretive message reduced resource degradation significantly over the previous sign that simply read "Removal of petrified wood is prohibited."

Although not universally agreed on (McAvoy and Dustin 1983; Schindler and Shelby 1993), the idea that indirect or nonregulatory management is preferred to direct or regulatory management of wilderness visitors is nevertheless widely accepted (McCool and Christensen 1996). One of the problems with using the threat of sanctions in wilderness is that they likely decrease the visitor's sense of behavioral freedom, an outcome long accepted as important to most wilderness visitors. As effective as sanctions can be, wilderness experiences may be diminished by threatened sanctions. Interpretive messages may be more appropriate in situations where the threat of a sanction is either not warranted or otherwise considered contrary to the desired experience. This study examined the effectiveness

Figure 2—Campfire sanction sign seen by subjects in slide presentation.

of interpretive messages as an alternative to sanction messages for wilderness visitor management.

Methods

Questionnaires were completed by a total of 237 participants randomly assigned to one of three treatments: control (no message), sanction message, or interpretive message. The participants were college students from upper division and graduate classes in natural resources and other classes. A total of 12 presentations occurred (four for each treatment type) averaging about 20 participants each, at two universities, one in a rural setting and one in an urban area.

All participants viewed slides of a hypothetical wilderness outing. To the control groups the researcher presented 17 slides with images they would encounter on a typical wilderness trip. For example, the first slide was of a trailhead; then a trail starting up a mountain; then a group of backpackers; then a scenic view; then a campsite, and so on. The sanction and interpretation participants viewed four additional slides of messages on signs, interspersed in the series of slides (sanction participants viewed sanction messages; interpretation participants viewed interpretive messages).

After viewing the slides, all participants completed a written questionnaire. Four scenarios were presented in the questionnaire. The scenarios correlated to the topic of the sanction or interpretive messages in the slide presentations (firewood collection, human waste disposal, cultural artifacts, and food scraps disposal).

All participants responded to the four scenarios by indicating, on a scale from 0% to 100%, the likelihood that they would perform each of three different behaviors in response to that scenario. One of these behaviors was the desirable or preferable behavior (from the manager's perspective); the others were incorrect or less desirable behaviors.

Providing the reasons for a regulation is almost always more effective than simply stating the rule.

Results

The order of the message slides was rotated among the four groups in each treatment. An analysis of differences in behavioral intention scores (the dependent measure) among the groups within each treatment revealed that order of message slides was insignificant, with only six statistically significant differences (Tukey's HSD, $p<0.05$) out of 216 possible pairwise comparisons (3 responses/scenario x 4 scenarios x 3 treatments x 6 pairwise comparisons/treatment).

An examination of differences across the three treatments on each of the 12 intended behavior responses (4 scenarios x 3 responses each) revealed 4 of the 12 intended behavior responses showed no significant difference across the three treatments. Eight responses showed a significant difference between at least two of the three treatments (Table 1). For all eight of these responses, the control group (no message) differed significantly from both the interpretation and sanction message treatments. In only one instance was there a significant difference between the sanction and interpretation message treatments. In that case, the interpretation message was significantly more effective than the sanction message (i.e., it elicited a higher probability of participants intending to perform the desired behavior).

Looking just at the undesired behaviors, each of the four scenarios had at least one response (and in scenarios 3 and 4, both responses), for which *any* message (sanction or interpretive) decreased the likelihood that a person would perform that incorrect behavior. Looking just at the desired behaviors, for two of the scenarios (firewood collection and food scraps), *any* message (sanction or interpretive) increased the likelihood that a person would perform the desired behavior. In summary, for

all four of the scenarios, the interpretive message was at least as effective as the sanction message, and in one scenario (firewood collection), the interpretive message was more effective than the sanction message.

Finally, participants' scores for the four desired behaviors were summed, as were their scores for the eight undesired behaviors. This allowed us to examine the effect of the three treatments on composite desired and undesired intended behaviors. This analysis mediates the effects that the individual scenarios might have, because certain scenarios may be more realistic or more compelling than others. For the desired behaviors, any message (sanction or interpretive) was significantly more effective than no message at increasing the probability of participants performing the desired behavior. For the undesired behaviors, any message (sanction or interpretive) was significantly more effective than no message at decreasing the probability of participants performing the undesired behavior. For both the desired and undesired intended behaviors, the interpretive and sanction messages were equally effective (i.e., there was no significant difference).

Discussion

These results are consistent with the findings of Gramann et al. (1995); participants exposed to an interpretive or "awareness of consequences" (AC) message were more likely to indicate that they would obey the rule (or perform the desired behavior) than participants not given any message. Gramann et al. found that sanction messages were somewhat more effective than AC messages at increasing the intentions to obey the rules, but this study found interpretive messages to be as effective as sanction messages. The explanation may lie in the subtle

Table 1—Mean Scores for Intended Behavior Responses to Scenarios with Scores on a 0–100 Scale Representing the Probability of Subject Performing a Behavior. Scenario Responses that Represent the Desired Behavior for Each Scenario are Labeled.

Intended Behavior Responses to the Scenarios	Control Group	Sanction Treatment	Interpretation Treatment	F ratio
HUMAN WASTE DISPOSAL				
1/1	24^{a}	12^{b}	14^{b}	4.46^{*}
1/2 (desired behavior)	76^{a}	78^{a}	81^{a}	0.74
1/3	32^{a}	23^{a}	23^{a}	2.02
CULTURAL ARTIFACT REMOVAL				
2/1 (desired behavior)	70^{a}	73^{a}	79^{a}	2.06
2/2	25^{a}	17^{b}	9^{b}	6.96^{**}
2/3	40^{a}	32^{a}	28^{a}	2.57
CAMPFIRE APPROPRIATENESS				
3/1	51^{a}	37^{b}	26^{b}	8.94^{**}
3/2	62^{a}	50^{b}	42^{b}	5.91^{**}
3/3 (desired behavior)	49^{a}	62^{b}	77^{c}	12.93^{**}
FOOD SCRAP DISPOSAL				
4/1 (desired behavior)	47^{a}	65^{b}	67^{b}	6.88^{**}
4/2	42^{a}	25^{b}	24^{b}	7.85^{**}
4/3	48^{a}	28^{b}	21^{b}	13.46^{**}

^{a,b,c} mean values with different superscripts are significantly different based on Tukey's Honestly Significant Difference test at a = .05.
*F ratio significant at a = .05. **F ratio significant at a = .01

Interpretive communication may be personal or … impersonal … , and may use images, analogies, metaphors, or stories to explain the significance of natural resources or cultural events, or to present the rationale behind management policies or regulations.

difference between AC messages and "interpretive" messages. Equally plausible is that differences may simply be an artifact of the different populations and/or the different scenarios and intended behaviors studied.

In this study, the firewood collection interpretive message was the only one that was more effective than its corresponding sanction message. It is possible that this scenario was more realistic or more compelling; it may have resonated more with participants than the other scenarios, or the interpretive message itself may have made the difference.

The dependent measure in this study was purposely limited to behavioral intention in response to an immediate scenario. Though speculative, exposing wilderness visitors to interpretive messages may have other effects, perhaps even more likely and/or more beneficial than influencing a behavioral intention on an immediate scenario. For example, Christensen and Dustin (1989) suggested that interpretive messages tailored to levels of moral development could ultimately increase a visitor's ethical understanding of his or her responsibility toward resources. Also, exposure to interpretive rather than sanction messages may affect how visitors perceive the managing agency. Might wilderness visitors exposed to interpretive messages view the managing agency more favorably than those exposed to sanction messages?

This study presented interpretive signs in the wilderness, viewed by participants as they proceeded on a hypothetical wilderness outing. This raises the question of whether interpretive signs are appropriate in designated wilderness. Nothing in the Wilderness Act appears to preclude interpretation. National Park Service (NPS) Director's Order 41 on Wilderness Preservation and Management (NPS 1999) states that guided interpretive walks may be conducted in wilderness so long as they are in accordance with day use limits prescribed in the park's Wilderness Management Plan. If interpretive walks are permissible in designated wilderness, perhaps interpretive signs are not inappropriate. However, the NPS (2001) Management Policies also state (section 6.3.10.4) that "Signs detract from the wilderness character of an area and make the imprint of man and management more noticeable. Only those signs necessary for visitor safety or to protect wilderness resources, such as those identifying routes and distances, will be permitted." To the extent that the purpose of the interpretive sign is to protect wilderness resources, it may be appropriate. However, perhaps such signs are more appropriate at wilderness portals, rather than inside wilderness boundaries.

Would interpretive signs at trailheads be effective? McCool and Cole (2000) examined visitors' attention to low-impact messages placed on wilderness trailhead bulletin boards and found that only 64% of visitors stopped at the bulletin board, and only 70% of those stopping attended to the messages placed there. For those visitors who did attend to the messages, there was a significant positive relationship between average attention time per message and message comprehension, and between message comprehension and knowledge.

Visitors who stopped at wilderness trailheads to look at low-impact messages with various appeals (the appeals encouraged visitors to stop and read the messages) attended to those messages for an average of 52 seconds (Cole 1998). Including an appeal increased attention time by 88% over a previous study (Cole et al. 1997) with no such appeal. Cole (1998) noted that deciding *whether* to pay attention to a message appears to be different from deciding how *much* attention to give to a message, and listed several attention-gaining techniques. Although not tested in this research, we suggest that presenting information in an interpretive fashion (made interesting and relevant) may increase the likelihood of gaining and holding visitors' attention to messages.

The ways that people respond to messages are complex, influenced by a great many variables. This study examined one such variable, the interpretive versus sanction nature of the message itself. The interpretive messages were as effective as the sanction messages. This is significant because interpretive messages may be more "wilderness experience appropriate" than sanction messages for managing wilderness visitors. This study did not test actual (observed or self-reported) wilderness visitor behavior. But if one accepts the premise that interpretive signs are more appropriate for wilderness than signs that threaten sanctions,

then the results of this experiment suggest a next step of conducting a field experiment similar to that of Cole (1998). Observation or visitor self-reports of behavior could be used to compare the effectiveness of interpretive signs with that of sanction and/or other traditional minimum-impact messages at gaining behavioral compliance with managers' low impact recommendations.

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International Wilderness-Related Websites

Current Status and Suggested Direction

BY CHARLES BESANCON and WAYNE FREIMUND

Wilderness information on the World Wide Web (www) has grown from the equivalent of elec tronic brochures into interactive information resources that together provide a wide range of useful information. In 1996, Freimund and Queen argued that mass communication could have a profound effect on developing a wilderness constituency and culture. After reviewing many wilderness-related websites on the World Wide Web, they called for an integrated online strategy to facilitate communication across the Internet, leading to the creation of the Wilderness Information Network (www.wilderness.net). Today, with over 5,000 hits per day, the website is a popular source of wilderness information.

Wilderness.net is not the only Internet source for wilderness information. In this article, we re-examine the presence of wilderness on the WWW to identify which sites are being used, and their purpose, mission, audience, and financial support. Websites specific to the concept of wilderness are dominated by U.S. organizations. The term *protected areas* is better suited to find the sites of the major global organizations that influence the conservation of wilderness. Although there are many good sites on the web, it is still a challenge to find the relevant information on a topic at a global or regional level. Search results also suggest that the technical network developing around these terms *wilderness* and *protected areas* remain separate. We suggest the development of a global clearinghouse that approaches the global supply of information about wilderness and protected areas from the user perspective rather than the addenda of the organizations that are producing the information.

Article co-authors Charles Besancon (left) and Wayne Freimund.

Searching for Wilderness on the World Wide Web

It is no surprise that the resources on the WWW have proliferated at an amazing rate. Human behavior, on the other hand, has not dramatically changed and most Web visitors are only willing to scan a couple of pages of results from a search when seeking information. Given the increasingly commercialized use of the Web, webmasters have become increasingly savvy on techniques to improve the chance of being rated toward the top of a search. In other words, the sites that appear at the top of a search engine do not necessarily reflect the popularity of the site—only their accessibility.

To address these issues, researchers at Stanford University have developed Google.com. Google uses a rating system that is based on the number of times a site is linked to and the popularity of the sites doing the linking. For example, the Wilderness.Net site rates very high because it is linked to by many well-established wilderness organizations or agencies. Likewise, it provides links to other sites

that are highly used and rated. Google has remained detached from the influence of advertising or other commercial interests to provide a site that has a research tool with high integrity. Thus, an internet search on Google, while not perfect, often returns a set of discrete sites that are specifically related to the topic and are often used.

Searching Wilderness Sites

Our first search using Google.com was simply on the word *wilderness.* The top site returned was from The Wilderness Society. The second was Wilderness.Net. The next two sites were not related to wilderness as a land designation. The remainder of the sites in the top ten included non-American sites in the Wilderness Society of Australia, and the Canadian Park and Wilderness Society. Also represented were the Southern Utah Wilderness Alliance, Wilderness Inquiry, the Chicago Wilderness page, and the Wild Wilderness home page. In total, the top ten included the National Wilderness Preservation System (via Wilderness.Net), six advocacy organizations, with two of those being non-United States, an adventure travel organization, and two sites unrelated to wilderness as a land use.

To add context to these initial results, we searched on the words *International Wilderness.* The first site retrieved was the WILD Foundation, followed by *International Journal of Wilderness,* Wilderness.Net, The Wilderness Society's global page, Sunrise Expeditions to Arctic Canada, the Word of Life Fellowship International Wilderness Ministries, International Wilderness First Aid, North Carolina Outward Bound, and the Listening Point Foundation. Again, the top results were dominated by U.S. organizations that represent a wide variety of interests in wilderness.

Protected Areas Searches

Recognizing that many of the large international organizations in wilderness conservation did not surface near the top of these searches, we broadened our lexicon from *wilderness* to *protected areas* in subsequent searches and accessed a very different set of results. At the top of the list was the array of resources offered by The World Conservation Union (IUCN) World Commission on Protected Areas; the Marine Protected Areas site provided by the National Oceanic & Atmospheric Association (NOAA); United Nations Environmental Program (UNEP)—World Conservation Monitoring Centre; the Protected Areas Conservation Trust of Belize, Central America; and the Science and Management of Protected Areas Association, which is based in eastern Canada. Searching on the term *protected areas* resulted in a more global result and included sites dedicated to the marine environment.

A Review of Selected Protected Area and Wilderness Websites

To better understand the design and range of content now available on the Web, we reviewed selected sites chosen on the basis of the large amount of information found there and the relative importance of the organization or coalition to protected-area and wilderness issues. The sites reviewed here represent the best global websites the authors could find for detailed information about protected areas and wilderness. The specific websites listed should not be considered the only resources available or the best. They simply reflect sites that ranked highly using the Google search engine and some we discovered by following links on other websites. The sites selected for review were the

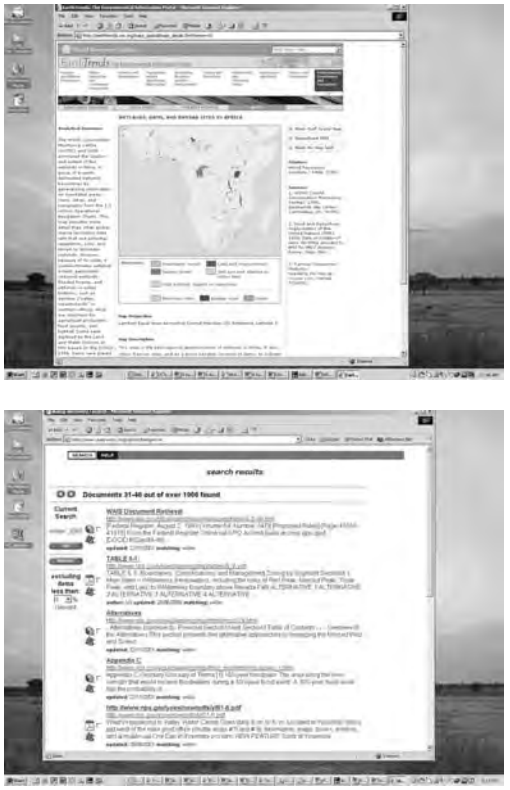

Figure 1—Programs like Earth Trends and World Conservation Monitoring contain valuable website information.

World Commission on Protected Areas (WCPA), Wilderness.Net, World Heritage Information Network (WHIN), EarthTrends from World Resources Institute, and the UNEP World Conservation Monitoring Centre (WCMC).

As a first step in our review, we tried to answer the following questions: what is the mission of the sponsoring organization, what is the function of the site, how is the site organized, who is/are the audience(s), who funds the organization/website, and finally, how can we categorize the site?

The **World Commission on Protected Areas** site (http://wcpa.iucn.org) is sponsored by the World Commission on Protected Areas (WCPA), part of the IUCN. The mission of the commission is to "promote the establishment and effective management of a world-wide representative network of terrestrial and marine protected areas, as an integral contribution to the IUCN mission." The audience for the

site is members of WCPA and includes many documents for download including guidelines for creating and managing protected areas, funding them, and evaluating the effectiveness of management. This site details plans for increased interactivity, but currently it is an online brochure for WCPA.

The **Wilderness.Net** site (www.wilderness.net) is sponsored by the Wilderness Institute at the University of Montana, and the four federal agencies that manage designated wilderness in the United States. The mission of the site is to "heighten the wilderness dialog worldwide." The content of the site is organized by areas including education, research, and the National Wilderness Preservation System. Audiences include managers, scientists, educators, students, legislators, and the general public. Many interactive features can be found here including a library of full-text research publications, lesson plans for students and teachers about wilderness, wilderness news, and discussion forums.

The **World Heritage Information Network** (WHIN) site (www.unep-wcmc.org/whin/index.html) is sponsored by the World Heritage Convention by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The mission of the site is to act as "a clearing-house for information about the natural and cultural sites identified as being of 'outstanding universal value' and inscribed on the World Heritage List by the Intergovernmental World Heritage Committee." The clearing-house is set up as a searchable index of partner websites that house information about World Heritage sites. Interactive features on the site include the ability to add your resource to the searchable index of World Heritage sites and search other partner sites.

The **Earth Trends** site (http://earthtrends.wri.org) is sponsored by the World Resources Institute and is "an environmental think tank that goes beyond research to find practical ways to protect the earth and improve people's lives," and it acts as an environmental information access portal. The content is organized around themes including coastal and marine ecosystems, climate and atmosphere, and biodiversity and protected areas, and so forth. For each theme, there is a searchable database, data tables, country profiles, maps, and features.

As part of the United Nations Environment Program, the **World Conservation Monitoring Centre** (WCMC) site (www.unep-wcmc.org) includes many interactive features such as databases and online mapping, as well as many Web pages with supporting information. The content is organized around resources, habitats,

Table 1—Protected Area and Wilderness Website Summary

	General Resources				Interactivity			Community Building	
	Downloadable Documents	Links to External Sites	Online Maps	Multiple Languages	Search Engine	Searchable Databases	Interactive Mapping	Discussion Forums	Listservs, E-mail News
Program and Website									
World Commission on Protected Areas (wcpa.iucn.org)	X	X			X				
Wilderness.Net (www.wilderness.net)	X	X	X		X	X		X	X
World Heritage Information Network (www.unep-wcmc.org/whin/index.html)		X		X	X	X			
EarthTrends from World Resources Institute (earthtrends.wri.org)	X	X	X		X	X			X
World Conservation Monitoring Centre (www.unep-wcmc.org)	X	X	X	X	X	X	X		X

species, regions, climate change, protected areas, conventions, and agreements. This site also hosts the Protected Areas Virtual Library, a database of information about all areas that meet the guidelines put forth by the IUCN in 1994, and includes a disclaimer explaining the database limitations and plans for the future. The interactive maps on this site are of high quality and utilize the latest in online map browser technology.

Discussion

All of the websites reviewed contain a great deal of information, and most utilize search engines enabling website visitors to quickly find what they are looking for on various topics (Table 1). The intended audiences for these sites range from the organization members to those that host very specialized content for technical audiences. Earth Trends and Wilderness.Net contain information for many different audiences. Two of the sites listed offer the added feature of Web pages and documents in languages other than English.

Three of the sites have interactive resources that help to build community among website visitors (i.e., Wilderness.Net, EarthTrends, and WCMC). These community-building resources include discussion forums, listservs, and news delivered through e-mail. Other types of interactive resources were online databases and geographic mapping engines.

In general, we found good resources and information on many topics. However, the fact that so many resources exist creates in itself a search problem when searching for specific information and there is no librarian to help. For example, there seems to be two very discrete set of results when using Google to search for *wilderness* and *protected areas*. While the term *wilderness* is used primarily in the United States and in some other areas in the world, the recognized lexicon for the global arena favors the term *protected areas*.

The term *protected areas* is better suited to find the sites of the major global organizations that influence the conservation of wilderness.

Toward a Strategy of Protected Area Information Coordination

The libraries of documents on these sites reflect the affiliations and work being conducted by the host organizations. Although the content is often excellent and in many cases is supplemented by Web links to other organizations with similar content, the burden of responsibility for finding good information is on the website visitor. What is missing is a coherent searchable global resource or some other form of organized guide to the topics of wilderness and protected areas on the Internet. The WHIN project comes the closest to making this need a reality, at least for World Heritage sites. By collecting information about World Heritage resources on the Internet, and indexing those sites, the WHIN project allows Web visitors to search many hundreds of external Web pages and documents through one interface.

A coherent searchable global resource could take resources from any content source, gather those resources in one location, and organize the content based on content type, audience, and level of intended specificity. In addition, such a resource could help to simplify and indeed blur the lines between the institutions and organizations that produced the information. This is especially important to those who may not be familiar with all of the jargon inherent in any complex concept like protected areas.

The current challenge is to develop an efficient structure for the many types of wilderness or protected area websites that exist. Such a structure could organize and add value to individual sites. The need is there to provide a more efficient resource that will be visitor centered and contribute to the global community that is already engaged in the conservation of wilderness and protected areas worldwide. We recommend the development of a global clearinghouse that approaches the global supply of information about wilderness and protected areas from the user perspective rather than the agenda of the organizations that are producing the information.

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Evaluating Student Satisfaction in Wilderness Education Courses

An example from the National Outdoor Leadership School

BY CHRISTOPHER MONZ

Introduction

Over the last four decades, the number of programs offering an opportunity for students to participate in outdoor education experiences has increased substantially. The popularity of these programs has been attributed to factors such as their ability to foster self-esteem, leadership skills, and environmental values in students compared to more traditional academic experiences (Kellert 1998). Moreover, our increasingly urban and populated society provides fewer opportunities for young people to experience unpolluted and undeveloped natural settings. Participating in outdoor education activities provides a venue to fulfill this need (Kellert 1998). The concurrent increase in popularity of outdoor and adventure recreation activities such as backpacking, rock climbing, and mountaineering (ORCA 1993; Ewert and Hollenhorst 1997) has undoubtedly influenced this trend, because many outdoor organizations utilize these activities as essential components of their programs to foster personal growth (Abbott 1995).

Article author Christopher Monz.

Numerous studies have been conducted in an effort to characterize the overall consequences of outdoor education experiences, with most studies indicating that these experiences can have a substantial impact on participants across a wide range of physical, intellectual, emotional, and spiritual factors (e.g., Ewert 1989; Kellert 1998). The most extensive, recent work was conducted by Kellert (1998) in a study of three well-established, national outdoor education programs: National Outdoor Leadership School, Outward Bound, and Student Conservation Association. In this work, students reported that the course experience provided a positive impact on many factors including skill attainment, personal growth, and environmental awareness. These trends were similar across the organizations studied, although some student-reported outcomes were different across the three programs.

The National Outdoor Leadership School (NOLS) was established in 1965 as a program to achieve specific educational objectives in an outdoor recreation setting. Although NOLS courses vary in length, geographic setting, and specific outdoor skills taught, the overall educational objectives are largely consistent across the program. These objectives include:

1. providing opportunities for leadership development;
2. effectively teaching minimum-impact wilderness travel skills; and
3. maintaining successful group dynamics in challenging situations (NOLS 1999).

Several recent research studies have examined various aspects of the NOLS student experience and program effectiveness. In one study, overall self-efficacy (a self-reported index that measured student perceptions of their ability to perform certain tasks expressed out of 100%) increased from 48% precourse to 82% immediately after, with males being initially significantly higher (53%) than females (41%) (Koesler 1994, 1995). Postcourse, no gender differences were observed, indicating that female student's self-efficacy increased more

dramatically than males. Hammitt (1995) investigated changes in NOLS students' behaviors, intentions, and attitudes as they pertain to the environment and found a significant increase in responsible environmental behavior after a course experience. An investigation of the effectiveness of the NOLS educational model for female students reported a high degree of program satisfaction and highlighted the importance of female field instructors as role models (Tyson and Koesler 1996). Investigations into precourse physical and emotional preparedness of students revealed that the most successful students were athletically oriented with little or no history of psychological treatment or counseling (Monz and Schimelpfenig 1997).

Satisfaction is an important measure that can aid in monitoring the quality of the services offered and provide information as to whether specific educational goals are being achieved. Participant and visitor satisfaction has been an important variable in the study of outdoor and wilderness recreation behavior (e.g., Kuss et al. 1990; Cole et al. 1995) and is regarded as a goal for visitor management by U.S. land management agencies. Williams and Nikerson (1987) reported a high degree of participant satisfaction in NOLS courses with some small differences among course types. Satisfaction was also found to be higher among students who engaged in additional physical exercise in preparation for their course. Outward Bound has collected satisfaction data since 1989, and recent analysis of 1997 data showed that 94% of students report that "they benefited from the experience," 86% report that the course was "an investment in their future," and 95% report improvement in outdoor skills (Sakofs 1998).

This report examines wilderness-based outdoor education course offerings from a student satisfaction perspective. The educational mission of NOLS and current program priorities offer the opportunity to examine the reliability of the established student satisfaction measurement instrument. This study is an examination of overall student satisfaction in NOLS courses and tests the hypotheses that the student's gender and type of course completed can affect student satisfaction.

Methods

A questionnaire was administered to all students completing NOLS courses during the spring and summer seasons in 1998. Students were surveyed at all NOLS branch schools located in the Alaska, Rocky Mountains, Pacific Northwest region of the U.S.; and internationally in Western Canada, Chile, and Kenya. The survey was administered by NOLS personnel during the standard course debriefing period, after students returned from the field, returned all equipment, and were meeting with staff members to review and discuss the course. An effort was made to allow every student the opportunity to respond; however, several courses were accidentally overlooked, yielding a course compliance rate of 90%. Courses are conducted in a variety of locations, and four basic types of experiences are offered: hiking courses with an emphasis on general backpacking and camping skills; mountain courses that focus on mountaineering and rock climbing skills; water environment courses that emphasize kayaking and canoeing skills; and multienvironment, semester-length courses that are taught in multiple settings. Students rated their satisfaction using a six-point scale (*strongly agree* = 6, *agree* = 5, *mildly agree* = 4, *neutral* = 3, *mildly disagree* = 2, *disagree* = 1, *strongly disagree* = 0.) on 18 questions including the level of precourse service, skill attainment, level of respect from students and staff, and ability to lead wilderness trips following course completion. Students were asked to rate their overall satisfaction and whether they would recommend a NOLS course to a friend. A total of 1,187 useable questionnaires were completed and analyzed from 90% of the courses in 1998.

Figure 1—NOLS students are challenged to improve their wilderness and technical skills. Photo courtesy of NOLS.

Data processing and statistical analyses were performed with SPSS statistical software. Factor analysis utilized a principal components analysis (PCA) approach with a varimax rotation and tests of scale reliability. Variables with loadings less than 0.4 were eliminated for ease of interpretation and factors were retained if the eigenvalue was equal to or greater than 1.0. ANOVA and t tests were performed using standard statistical methods.

Figure 2—NOLS courses provide students with a wide variety of challenges and new experiences and information. Photo courtesy of NOLS.

Results

The entire survey of 18 questions was analyzed with an exploratory factor analysis, resulting in a reduction of the data into six factors (Table 1). The six factors explained 61% of the variation in the data. Of the 6 factors identified, 4 were readily interpretable as educational concepts at NOLS: Factor 1—precourse attention from admissions personnel; Factor 2—feelings of respect from fellow students and instructors; Factor 3—learning wilderness skills; and Factor 4—overall satisfaction. These four factors account for 12 out of the 18 NOLS survey items, with the remaining six items being unassociated with any interpretable factor: expectations, safety, in-town staff, environment, ability to lead, and teaching strategy. Reliability analysis of four scales (Table 1) revealed that they were reliable (Cronbach alpha ≥ 0.60).

The effect of the type of NOLS course on student satisfaction is shown in Table 2. Overall, students report a high degree of satisfaction. Reported average satisfaction with precourse attention was significantly lower on mountain environment courses (4.09) compared to the hiking, water-based, and multienvironment courses (4.65, 4.80, and 4.62, respectively). Students reported a significantly higher average satisfaction with learning wilderness skills on multienvironment courses (5.62), but also a significantly lower feeling of respect (5.17) as compared to the other course types. No statistically significant differences in overall satisfaction were found among the four course types.

Female students reported higher satisfaction than male students for several factors. For precourse attention, female students scored significantly higher on average (4.74) than males (4.56, t = 2.95, $p < 0.05$). Females also reported a significantly higher overall average satisfaction (5.43, t = 2.44, $p < 0.05$) than males (5.32) and females rated learning wilderness skills higher (5.63, t = 3.99, $p < 0.05$) than males (5.51). No statistically significant differences were reported in average student feelings of respect between females (5.28) and males (5.27).

Table 1—Factor analysis and reliability results, and mean scores for 12 of 18 survey items in 1998 NOLS courses.

Factors and Survey Items	Rotated Factor Loadings	Mean Scores	Item Total Correlation	Cronbach's Alpha
Precourse attention				**.62**
Precourse service	.843	4.70	.45	
Precourse info	.770	4.55	.45	
Feelings of respect				**.73**
Respect (students)	.571	5.13	.40	
Respect (instructors)	.792	5.33	.56	
Receptiveness	.795	5.35	.55	
Learning Wilderness skills				**.71**
Leadership skills	.479	5.43	.44	
Wilderness skills	.774	5.69	.58	
Navigational skills	.801	5.62	.58	
Technical skills	.623	5.48	.40	
Overall satisfaction				**.77**
Satisfied with education	.670	5.49	.57	
Recommend to friend	.803	5.63	.68	
Would take another course	.785	4.99	.50	

Table 2—A Comparison of Reported Mean Factor Ratings for Four Types of NOLS Courses in 1998.

	Course Type (mean value)[1]			
Factors	**Hiking**	**Water-based**	**Mountain**	**Multi-environment**
Precourse attention	4.65[a]	4.80[a]	4.09[b]	4.62[a]
Learning wilderness skills	5.49[b]	5.34[b]	5.33[b]	5.62[a]
Feelings of respect	5.54[a]	5.39[a]	5.38[ab]	5.17[b]
Overall satisfaction	5.41	5.28	5.22	5.38

[1] Course type group means followed by different letters are significantly different at $p \leq 0.05$ using the Scheffe' multiple comparisons test.

Discussion

Student satisfaction is an important goal for outdoor programs, particularly given the arduous nature of the activities, remote surroundings, and challenging group dynamics of the course settings. Creating an environment where students are comfortable and feel safe is particularly crucial to the attainment of educational goals.

Williams and Nikerson (1987) addressed two dimensions of the student experience by measuring overall satisfaction as an index of the quality of the recreational experience and helpfulness of the course as an index of the attainment of educational goals. Students overall reported a high degree of satisfaction (7.6 to 8.3 on a 9-point scale) across all course types, and a high degree of course helpfulness (6.3 to 7.9). The most comparable results in this study would be the overall satisfaction factor, and it indicates a high degree of satisfaction with NOLS courses in 1998 (5.28 to 5.41 on a 6-point scale) (Williams and

Nikerson 1987). Overall satisfaction did not differ significantly with course type in this study, and this trend is similar to previous work where little difference among course types was observed.

Students on multienvironment (semester-long) courses reported higher satisfaction with learning wilderness skills compared to other course types. These courses offer a long period in the field (90 days) as compared to the standard 30-day experience with the other NOLS course types. In the longer courses, students have more of an opportunity to practice basic wilderness skills such as navigation, and the opportunity to learn a variety of setting-dependent skills, such as mountaineering, kayaking, and skiing. These results indicate that perhaps these courses offer the opportunity for students to gain a higher level of proficiency in overall outdoor skills. In contrast, students in the same courses have the lowest feelings of respect. Possibly, students are feeling tired toward the end of these courses, as it is a long period to remain enthusiastic about the rigors of the field experience with a group of peers and, as a consequence, feelings of respect may be slightly diminished.

Student ratings on precourse attention were the lowest on mountain courses and lower than other NOLS course scores. This suggests the need to better prepare students for their experience, especially on mountain environment courses, which can be particularly demanding, especially in the remote areas where NOLS teaches these courses such as Alaska and Patagonia.

Higher ratings by females for the concept of learning wilderness skills is supported somewhat by previous research. Koesler (1994) reported a higher degree of skill attainment (in terms of self-efficacy) for females than for males. Therefore, females may be more satisfied with their overall satisfaction as reported in our 1998 study. There were no differences in feelings of respect between genders, and this suggests that overall, female students feel equally well treated as males by their instructors and fellow students. These results support previous findings (Tyson and Koesler 1996) of a high degree of program satisfaction overall by female participants.

Overall satisfaction did not differ significantly with course type in this study, and this trend is similar to previous work where little difference among course types was observed.

Students reported a high degree of satisfaction overall, and satisfaction with learning wilderness skills is highest on multienvironment courses. This is an important finding to outdoor programs as it suggests that the longer and more diverse course experiences may be more desirable if skill proficiency training is a primary objective. Future research should examine courses of varying length in the field to determine the relationship between time in the field, course curriculum, and reported satisfaction on learning skills. The current NOLS survey is a reliable instrument for concepts examined, but several important components of the NOLS educational mission, such as leadership, should be included in future assessments.

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Finding the Voice of Japanese Wilderness

BY AYA HAYASHI

Introduction

Although the word *wilderness* is not familiar to the Japanese people, the Japanese concept of wilderness can be seen in its view of nature. The Japanese view of nature has helped to develop the Japanese sense of values, ethics, and aesthetics of unifying Japanese life with nature. This article describes the Japanese wilderness and the Japanese view of nature as affected by geography and culture and discusses future issues of development.

At the present time,
Since I could bring no offering,
See Mount Tamuke!
Here are brocades of red leaves,
As a tribute to the gods.
(Kanke, Circa 845–903)

Many old Japanese songs, called *tanka,* tell us how close a relationship with nature the ancient Japanese people had and how they enjoyed life blessed by nature in those days. The ancient Japanese people seemed to have dialogues about nature. From these songs, we see a sensitivity to nature that the modern Japanese may have lost, just as they have lost much of their natural environment. There is a movement in Japan of people who are trying to revive this traditional Japanese view of nature. For example, the International Research Center for Japanese Study conducted research in 1990 and 1991 regarding the Japanese indigenous view of nature from the Jomon Period (10000 B.C to 400 B.C) to the present, which involved considering the viewpoints of history, ethnology, literary, and comparative culture. This research suggested reconsidering the relationship between people and nature (Ito 1995). As one's view of nature influences one's behavior toward the natural environment, reflecting on traditional views may bring about a new approach for future development of a relationship between humans and nature.

Article author Aya Hayashi and friend. Photo courtesy of Aya Hayashi.

The Traditional Japanese View of Nature

Originally, there was no word corresponding to "nature" in the Japanese language. The reason the Japanese did not have the concept of nature as a separate term is that nature and people's lives were unified. Nature had existed as itself and did not include any concept that implied the opposite meaning of artificiality (Momokawa 1995). The word *nature* was translated into Japanese as *shizen* borrowed from a Chinese word from the 19th century. However, *shizen* encompassed several definitions that originated differently from the Japanese view of nature. Therefore, comparison with the Western view of nature is often used in order to reveal the Japanese view (Tsukahara 1984; Umehara 1995). A view of nature may be clarified by examining the two common types of relationship between nature and humans: (1) humans as a part of nature, such as in the Japanese or Eastern view of nature; and (2) humans as separate from nature, such as in the Western view of nature. Although an animistic view originated in many societies, factors like geography, climate, and history led to different types of relationships with nature in each society (Tsukahara 1984).

Geographic and Climatic Influence on View of Nature

The reason for these different views is often explained as a geographic artifact (Yasuda 1997; Suzuki 1998). The Western view of nature, which reflected the Judeo-Christian tradition, was born in the desert areas of the Middle East. Due to

the severe climate, the people who lived there looked at nature as harsh and separated nature from humans in order to survive. In this environment, the people carefully observed the rules of nature, and that is said to have been the start of natural science. They began to control the natural environment using new scientific knowledge that they had gained through their observation of the natural environment. They used the raw materials available for development. This raw material was supposedly given by God with the stipulation that people would have dominion over their environment and should modify it to their needs (Tsukahara 1984).

The Japanese view of nature was born in a less harsh environment of mountains and forests. Even today, 67% of Japan is mountain, forests, or fields (National Land Agency 1998), and the climate is affected by monsoon seasons. For ancient Japanese people, in this environment, nature was a mysterious and powerful place, and people developed effective methods for living in harmony with it. People realized that everything is ephemeral in the circulation of life, and they aimed for unification with all animate beings. They did not have ideas of "managing" nature (Gloy and Ishida 1994). The Japanese were awed by nature, saw divinities in natural beings, and believed that nature would retaliate if it were not treated with respect. This belief and attitude still exists today within the spiritual structure and religions of the Japanese people (National Parks Association of Japan 1996). This awe of nature has unintentionally benefited conservation.

Suzuki (1998) suggested that unifying with nature can be better realized in forests. In deserts, such unity may mean death due to the severe environment. Therefore, the relationship between people and nature evolved differently in each environment. In my personal experience, when I went on a solo wilderness trip through a desert area of the United States, I had a totally different experience than when I did a solo trip in a Japanese forest. I felt awe and familiarity in assimilating myself into nature in Japanese forests. However, when I was in the desert in the United States, I was overwhelmed by the magnificence and felt isolated from nature. It was a very valuable opportunity to directly experience different types of wilderness and imagine the varying influences of each.

Figure 1—Small shelters are built in the forest as a place to appreciate nature. Photo courtesy of Aya Hayashi.

The Effect of the Japanese Religion and Culture

The traditional Japanese view of nature can be found in Japanese religions and customs. Shinto is the Japanese traditional religion based on an ancient Japanese philosophy that is an animistic ethnic belief with influences from Buddhism and Confucianism. The main doctrine of Shinto is the worship of nature and the ancestors. In this philosophy, the Gods, called Kami, live everywhere, especially in pristine nature; humans are able to live by receiving blessings from nature. This pantheistic belief has developed from the basic Japanese way of thinking rather than from a religious doctrine. Today, some of these traditional customs remain in daily life. For example, before eating a meal we put our hands together in prayer, and say "Itadaki-masu," which signifies an appreciation for the cook, farmers, Kami, ancestors, environment, and everything that went into the production and preparation of the food. Food symbolizes a kind of blessing from nature. The Japanese view of nature and the concept of wilderness came from these geographic and religious contexts.

The Concept of the Japanese Wilderness in the Traditional View of Nature

It is difficult to understand the meaning of wilderness for Japanese people because the concept of wilderness does not clearly exist in Japan. There are some

Figure 2—Waterfalls at Sandankyo Valley in the mountains near Hiroshima, Japan. Photo courtesy of Aya Hayashi.

Figure 3—The Mitaki Temple near Hiroshima, Japan is for the gods who live in nature. Photo courtesy of Aya Hayashi.

words that are used as a translation of wilderness, but these words do not correspond closely to the original meaning in English. The word *wilderness* is not usually translated into Japanese and is used for wilderness education or related topics. In conversation, words related to nature, such as *mountains, forests,* or *sea,* sometimes imply not only actual geographic areas, but also the meaning of wilderness.

The Mountain Belief, an ancient Japanese belief, might be a similar concept to the Western view of wilderness. Most mountains in Japan are covered by forests, and there are many Shinto shrines and Buddhist temples in the mountains. Mountains are the place where Gods live and to which the souls of dead people climb. Mountains represented a model of the universe with high altitude and open places often having names associated with heaven; valleys, especially volcanic landforms, often called *hell;* and the rivers between them connecting both worlds. People expected their personalities to develop through receiving the grace of God in mountains (Yamaori and Ohmori 1999). In historical literature, some mountains and Kami were given a high status, by the Imperial Court of ancient Japan, to show their relationship with people's life (Koizumi 2001). A sect of Buddhism called Shugendo developed out of these beliefs. Shugendo placed an emphasis on communication with nature, and its training was very strict, taking place in remote mountains. Certain parts of mountains, such as the summits, were treated as sanctuaries for religious reasons. Ito (2000) explained that in those days the Japanese people tried to designate these places as *wilderness* by separating them from other places because there was little wilderness, in the Western sense, in remote areas of Japan because of the small amount of land.

Table 1—The Area of Designed Parks in Japan in 1999 (Japanese Ministry of Environment 2001).

Designed Parks	Number	Area (ha)	Proportion of National Land (%)
National Parks	28	2,046,508	5.4
Quasi-National Parks	55	1,343,181	3.5
Local Natural Parks	307	1,957,360	5.2
TOTAL	**390**	**5,347,049**	**14.2**

Table 2—The Area Designed for Conservation in Japan in 2000 (Japanese Ministry of Environment 2001).

Conservation Area	Number	Area (ha)	Proportion of National Land (%)
Wilderness Area	5	5,631	0.02
Natural Conservation Area	10	21,593	0.06
Local Conservation Area	524	73,739	0.20

The Contemporary View of Nature

Japanese society has accepted science and technology from Western culture. As a result, people have become separated from nature and only value nature for the benefits that can be gained. Tsukahara (1984) pointed out that the awe toward nature in the traditional Japanese view has decreased and the contemporary view of nature is based both on superiority over nature and dependence on nature. Today, many Japanese people develop a view of nature without directly experiencing the historic and traditional relationship with nature. Some people say that the spiritual foundation of Japanese people is in danger, and that it is doubtful that the modern concept of nature will lead to the development of the relationship between humans and nature as a culture resource.

Some problems have been reported about the modern view of nature in Japan. For example, Tsukahara (1984) claimed that contemporary Japanese people lack responsibility for nature; whereas, the people in the United States developed a system of nature conservation. Sato (1996) mentioned that the Japanese have been so spoiled by nature that they still believe nature can accept anything and purify it. Miyauchi (1997) suggested that the Japanese should recognize that the damage from scientific technology is often beyond the ability of nature to correct, and they should seek new approaches utilizing the traditional view of nature.

Japanese Wilderness Management

Japan's National Parks Law, enacted in 1931 and rewritten in 1957, aims to conserve scenic areas and their ecosystems; to promote their utilization; and to contribute to the health, recreation and environmental education of the Japanese people (Table 1). The Nature Conservation Law was enacted in 1972 for the purpose of designating and conserving the natural environment, wilderness areas, nature conservation areas, and prefectural nature conservation areas in Japan (Table 2). The Nature Conservation Law followed the model of the U.S. Wilderness Act of 1964. Ito (2000) has criticized the Nature Conservation Law because it mostly values conservation of valuable natural environments and neglects recreation use for its intrinsic value.

The National Parks Law and the Nature Conservation Law do not work well in some natural areas because of very complicated management systems. Only the wilderness areas designated by the Nature Conservation Law (Table 2) could be called *wilderness* with approximately the same meaning as wilderness areas defined by the World Wilderness Congress.

Figure 4—Japanese children learn to develop a relationship with nature near Miyagi, Japan. Photo courtesy of Aya Hayashi.

In wilderness, we may be able to give people opportunities to assimilate nature and listen to its voice, which, hopefully, will become the beginning of building a new relationship with nature.

Conclusion

The concept of wilderness and the Japanese view of nature have been influenced by geographic artifact and history. Eastern and Western concepts have developed independently according to unique social and cultural features. Each culture has developed its own approach to environmental issues to fit its own concept of nature. For example, the United States has sophisticated systems and techniques for resource management. Likewise, the Japanese view of nature may be useful for considering the management of the relationship between people and nature. If we are able to listen to the voice of nature as the ancient Japanese did, we can find what is really needed for nature as well as people, in terms of building a harmonious relationship, not only in scientific ways, but also in humane ways for mutual understanding. In wilderness, we may be able to give people opportunities to assimilate nature and listen to its voice, which, hopefully, will become the beginning of building a new relationship with nature.

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New Technology and the Future of the Wilderness Experience

BY NICK SAWYER

Introduction

This article examines the effect of technological developments over the last 30 years on the experience of walkers in wilderness areas. My assumption is that one key aspect of the wilderness experience is the absence of awareness of modern technological society. I assume that self-reliance is an important component of the wilderness experience, but I do not consider that self-reliance extends to not wanting to seek the best available assistance as quickly as possible should an emergency occur.

My thesis is that the decision on how to use, or not use, any of this high-technology personal equipment is the decision of the individual user, and it is predominantly their personal experience which is affected, and that only to a limited extent. Some of the real threats to the wilderness experience are an ever-increasing number of users, associated increased management inputs, and increasing commercialization of wilderness use. These are more subtle in their effect and much harder to avoid.

Article author Nick Sawyer.

This article is an essay on the subject of technology and wilderness; it is intended to provoke debate and is based largely on my personal experience of 30 years of backcountry walking, primarily in Tasmania, Australia, with particular reference to the Overland Track, which has been Tasmania's most popular long-distance (5 days) walking track since the 1930s. In addition to my personal experience as a walker, I have been increasingly involved in recreation management issues since the mid-1980s, and have worked for seven years as a planning officer for the Tasmanian Parks and Wildlife Service. My master's thesis in 1991 was on "Management of Bushwalking in the Tasmanian Wilderness World Heritage Area". However, the views expressed in this article are mine alone and should not be taken as representing those of the Parks and Wildlife Service.

Technological Developments

Personal equipment includes rucksacks, tents, sleeping bags, sleeping mats, clothing, cooking stoves, food, and almost all the small items that one carries on a wilderness walking trip. I will not examine each in detail, but the effect of technological developments in all of these items has been more functional equipment that increases comfort and reduces the weight to be carried. This can have the effect of either making short-easy trips more comfortable or making long-hard trips more feasible.

Global Positioning Systems (GPS) tell the users their location with an accuracy of a few meters and work under almost any outdoor conditions except very dense tree cover. They usually feature other computational gimmicks to supposedly aid navigation. I have carried a GPS on my wilderness trips for about five years, since they became affordable and sufficiently small and lightweight. I regard it as a very useful aid to navigation, but I use it rarely and have never been lost. On most trips I would never take it out of my rucksack, but it can be very useful to be sure exactly where you are (e.g., in thick mist). GPS equipment does not remove the need to understand a map because the walker who does not understand map

symbols and relies only on the bearing from his or her GPS to guide him or her to the next "waypoint" across rugged, untracked terrain will encounter problems. The GPS equipment does "deskill" a person in off-track navigation because you can always find out your exact location; without a GPS, fixing your position can be difficult in good conditions and impossible in bad conditions. GPS units are almost irrelevant to on-track walking where most walkers spend most of their time and where the required navigation skills are similar to reading a road map.

What is the difference in principle between using a compass to aid navigation and using a GPS? Both are artificial aids to navigation. One was invented over 500 years ago, the other within my adult lifetime, but if the wilderness purist is going to argue that wilderness users should navigate without technological aids, they should give up their compass and accept that they cannot orientate themselves when the sun or the stars are obscured. I suggest that a far greater threat to the sense of "exploration" or adventure in a wilderness trip is the availability of ever more detailed maps and information.

Emergency Position Indicator Radio Beacon (EPIRB) equipment can be used to summon help quickly in an emergency and are sufficiently small and lightweight to be feasible to carry on extended wilderness walking trips. A satellite first detects the signal and indicates the approximate (100-kilometer or 60-mile radius) location to the search authorities. The search helicopter can then use the radio beacon to locate the EPIRB position exactly. The use of EPIRBs in wilderness areas in Tasmania is strongly encouraged by the authorities.

There have been suggestions that EPIRBs discourage self-reliance, encourage frivolous calls for help, or encourage ill-equipped parties to attempt trips that are beyond their ability, knowing that they can easily summon assistance if they get into difficulties. I do not doubt that there have been examples of both of these abuses of EPIRBs, but I am not aware of any data that suggest that such abuse is widespread. My guess is that the vast majority of EPIRBs are carried by responsible wilderness users who will use the equipment as an additional safety factor should an emergency occur.

The most obvious practical disadvantage of EPIRBs is an increase in risk to the rescuer in some circumstances because the EPIRB signal gives no indication of the nature of the emergency. Does the caller have life-threatening injuries that require immediate assistance, or do they simply require evacuation when convenient? There have been cases of the rescue helicopter making a hazardous trip in darkness or bad weather to retrieve a casualty with a twisted ankle who was in no immediate danger or even discomfort; their only problem being that they were unable to walk out to civilization without assistance.

I do not believe that *responsible* use of EPIRBs or mobile phones to summon help in an emergency compromises the wilderness experience because I do not believe that people would not want to be rescued if they injure themselves or fall ill in a remote area—I know that I do, and the sooner the better! Remember that the alternative is that some other person(s) would need to get out to civilization as fast as possible, and this may be hazardous in itself to those summoning help.

Satellite and cell phones could possibly set the definition of a wilderness area as those areas "beyond cell phone coverage," although this is now becoming less relevant with the availability of lightweight and affordable satellite phones that allow communication from anywhere with a clear view of the sky. The most obvious reason for carrying this equipment is safety because they go one step beyond the EPIRB and eliminate the "search" from "search and rescue." In the event of an accident, you can talk directly to the rescue authorities, tell them where you are and what the problem is, and get medical advice while waiting for help to arrive, or tell the rescue authorities that the situation does not demand immediate assistance and the helicopter crew does not need to risk their lives in foul weather. Anything that reduces the need for extensive searches for over-

Figure 1—The author using his satellite phone in the Tasmanian Wilderness World Heritage Area. Is carrying a satellite phone a sensible safety precaution or an insidious intrusion into the wilderness experience? Photo courtesy of Nick Sawyer.

Figure 2—A hand-held Global Positioning System unit in use. Is this a minor technological aid to wilderness navigation or a major de-skilling of the wilderness user? Photo courtesy of Nick Sawyer.

due walkers is very beneficial, not just for the rescue authorities, but also for the wilderness experience of other users of the area, because major search operations can bring large numbers of people and helicopter activity into a remote area for an extended period.

The potential effect of carrying a phone depends on how you use it. Most wilderness users would agree that use of a mobile phone in the wilderness just to keep in touch with the modern world is a major intrusion into the wilderness experience, but for some people this is the price they have to pay for being able to get away into the wilderness at all. For example, family or business responsibilities may require a daily phone call to reassure or check for emergencies. If the phone is kept purely as a device for summoning assistance in emergencies it will rarely be used, and the effect on the user's wilderness experience is essentially nil because it is carried just for the knowledge that help can be summoned quickly in an emergency.

Radio receivers and personal stereos have been available to carry on extended walking trips since their invention. Assuming that these are used responsibly (e.g., headphones) so that they do not annoy others (a separate issue) these affect only the user. A radio can, assuming adequate reception, be a reminder of the outside world (e.g., news broadcasts, cricket scores), and it can also bring useful information such as weather forecasts that can change plans for a wilderness trip and reduce personal reliance on observing the weather pattern. Unlike the phone, which can be reasonably carried for emergency use only, a radio receiver can only serve to diminish the wilderness experience, although it could be argued that forewarning of really bad weather serves a useful safety role. Personal stereos have appeared on the scene more recently. However, used sensibly, is a personal stereo any different in principle to the book that I usually carry on extended trips?

Major Influences in the Past 30 Years

Equipment like my rucksack is slightly lighter now than it was for the same trip 30 years ago, and the equipment it contains will keep me substantially more comfortable for longer periods. This will occasionally result in a trip continuing when previously I would have turned back, or not gone at all. Wilderness walking is still essentially the same as it ever was in Tasmania. It is still a very physical activity conducted in intimate contact with the natural environment. I still have to carry a substantial weight on my back. I still get hot and sweaty in the sun and cold and damp in the rain, despite what some advertisements for hi-tech outdoor clothing may suggest. If I am a three-day walk from the end of the nearest road, then the comforts of civilization are still that far away, even if my GPS will instantly tell me my location and my satellite phone means that I have the potential to contact family or emergency services immediately. I choose not to let the outside world intrude during my wilderness trips any more than necessary.

So what do I consider to be the major changes during my walking lifetime? Not any of the technical advances discussed above, but rather three issues:

1. More wilderness management. Use of wilderness areas has increased substantially since the early 1970s. Besides the obvious effect of increasing the number of encounters with other people in the wilderness, this inevitably increases the level of management of these areas (e.g., repair of tracks and provision of toilets are necessary to reduce the environmental impact of users) and intrudes on the wilderness experience, no matter how sensitively it is done.

2. Increased quantity and quality of information. When I first walked the Overland Track in 1973, it was still an adventure for walkers of limited experience, there were relatively few other walkers around, and the trip had elements of an adventure into the unknown. We had to actively seek out the very limited quantity of information that was available. The map showed a track and some huts; a crudely copied note sheet and personal contacts confirmed that there was a distinct track for the whole distance. Now there is a choice of readily available guidebooks. The main guide to Tasmania for overseas backpackers promotes the Overland Track as a "must do" experience. Plus there is the Parks

and Wildlife Service literature, and information from many sources on the Internet. The Parks and Wildlife Service actively manages the experience of walkers on the track, and markets the Overland Track as one of the "great walks." Walking the Overland Track is no longer a big step into the unknown.

In Tasmania, the effect of increased information is even more noticeable when walkers venture off the major established tracks. In the 1960s there was incomplete map coverage of these areas at a scale of 1:100,000. Major cliff lines might not show at all, and the indicated vegetation cover was little better than guesswork. Vegetation cover was a major influence on the feasibility or otherwise of cross-country walking. By the mid 1990s the whole state was covered by 1:25,000 maps that showed both topography and vegetation in far greater and more reliable detail than previously available. Planning new cross-country routes became dramatically easier.

3. Increased commercialization. In the early 1970s commercial (guided) walking opportunities were very limited in Tasmania and elsewhere in Australia and New Zealand. Commercial use of the Overland Track was at its lowest point with less than 3% of the users being clients on commercial trips. Now guided walking opportunities abound and about 25% of walkers on the Overland Track are clients on commercial trips.

Very few walkers of my generation would have started their backcountry walking on a commercial trip, and those who did so would soon have to work out how to do it themselves, because so few commercial walking opportunities were available. Most older walkers probably started in groups such as scouts, or clubs where the main aim was instructional to foster independence. By contrast, the main aim of most commercial trips is to make life as comfortable as possible for the clients and not to instruct them. Will walkers whose experience is confined to such trips ever graduate to organizing their own self-reliant trips, or will backcountry walking remain for them a consumer product to be purchased whenever they feel like a change of scene? What will this do to their attitude to the land? Many independent backcountry walkers become passionate advocates for the wildness of the land they use. Will this sense of advocacy apply to clients on commercial trips? Much research remains to be done. In the long-term, this could be one of the biggest threats to wilderness.

NICK SAWYER is a senior environmental officer for the Tasmanian Department of Primary Industries, Water and Environment; e-mail: Nick.Sawyer@dpiwe.tas.gov.au.

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areas. In this way, diverse experience opportunities might be preserved. However, such regional planning requires site-specific information from other areas as well. It is our hope that additional research efforts of this kind will help further understanding of wilderness experiences and also preserve the value of a diverse wilderness system.

BRIAN GLASPELL is a research assistant at the Aldo Leopold Wilderness Research Institute and a recent Ph.D. graduate in the School of Forestry at the University of Montana. E-mail: bglaspell@fs.fed.us.

Announcements and Wilderness Calendar

COMPILED BY STEVE HOLLENHORST

Wild Foundation and Sierra Club Team Up on African Wildlife Protection Grants Program

The Sierra Club has partnered with the WILD Foundation to implement the Sierra Club's African Wildlife Protection Grants Program in Southern Africa. The program was designed to build community support among indigenous communities and environmental decision makers for wildlife protection, particularly for large mammal protection in southern Africa. In keeping with the Sierra Club's tradition of involving local communities with environmental protection, WILD's "hands-on" projects help create long-term solutions, which protect and sustain wilderness and wildlife while meeting the needs of indigenous cultures. More on the program can be found at www.sierraclub.org/beyond theborders/africa/.

Wilderness Watch Launches Wilderness Guardian

Wilderness Watch announced a new service for 2002. The *Wilderness Guardian* is a monthly online digest dedicated to providing up-to-date news and information concerning wilderness protection and stewardship in the United States. The *Guardian* was created to help wilderness advocates keep abreast of breaking news, as well as providing contact information to facilitate public participation. Understanding the importance of limiting the e-mail arriving in your inbox the *Guardian* will be limited to once-a-month publication, with no superfluous e-mail. If you are interested in receiving the digest, please contact Hilary Wood at hwood@wildernesswatch.org, indicating your request in a brief note in the subject heading of your letter.

Guidelines for Marine Protected Areas Published by IUCN/WCPA and Cardiff University

The World Conservation Union (IUCN), in partnership with Cardiff University, recently published a set of guidelines for managing marine protected areas. The publication is available online at http://wcpa.iucn.org/pubs/publications.html. Other online publications in the "Best Practices Protected Area Guidelines" series include:

- Guidelines for Marine Protected Areas
- Indigenous and Traditional Peoples and Protected Areas
- Evaluating Effectiveness—A Framework for Assessing the Management of Protected Areas
- Mining Position Statement
- Economic Values of Protected Areas
- National System Planning for Protected Areas
- Guidelines for Protected Areas Management Categories
- Transboundary Protected Areas for Peace and Co-operation

Lawsuit Seeks to Prohibit Motorized Vehicle Tours in Cumberland Island Wilderness

Washington, DC—Three conservation groups filed a lawsuit in federal court challenging the National Park Service's (NPS) decision to authorize motorized vehicle tours in the Cumberland Island Wilderness. The suit, filed by Wilderness Watch, Defenders of Wild Cumberland and Public Employees for Environmental Responsibility, seeks to stop motorized tours in the Wilderness to protect the area's primitive character and to bring the NPS management of the area into compliance with the law.

Submit announcements and short news articles to STEVE HOLLENHORST, *IJW* Wilderness Digest editor. E-mail: stevenh@uidaho.edu.

Located off Georgia's southeast coast just north of the Florida border, the island is the largest undeveloped barrier island on the eastern seaboard. The entire island was designated as the Cumberland Island National Seashore in 1972. Ten years later Congress designated the 8,800-acre Cumberland Island Wilderness at the north end, and the entire Island was named an International Biosphere Reserve in 1984. The Island provides shelter for over 300 species of birds and nesting sites for sea turtles, including the threatened loggerhead sea turtle. The groups oppose the tours, citing that the Wilderness Act prohibits the use of motorized vehicles in wilderness except in rare cases such as emergencies. The suit also alleges that the commercial nature of some tours violates the Wilderness Act's limitation on commercial use. Although some of the tours are operated by the NPS itself, the majority are conducted by Greyfield Inn, a private corporation. In both cases, the suit claims the NPS failed to consider the environmental impacts of the tours or to elicit public review and comment.

World Heritage Committee adds 31 sites to World Heritage List

The 25th session of the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Committee in a meeting held in Helsinki, Finland, in December 2001 inscribed 31 new sites from 24 countries on the World Heritage List. The 31 new inscriptions included six natural sites: the Brazilian Atlantic Islands and Chapada dos Veadeiros and Emas National Parks (Brazil); Alejandro de Humboldt National Park (Cuba); The Sikhote-Alin mountain range (Russian Federation); The Jungfrau-Aletsch-Bietschhorn region (Switzerland), and the Dorset and East Devon Coast (United Kingdom). Several natural sites already on the World Heritage List were also extended, including: the Galápagos Islands, Equador (extension to include the marine reserve); Lake Turkana National Parks Kenya, (extension of the Sibiloi/Central Island National Parks to include South Island National Park); and Volcanoes of Kamchatka, Russian Federation (extension to include Kluchevskoy Nature Park). The World Heritage List now numbers 721 sites of outstanding universal value in 124 countries, 554 of which are cultural sites, 144 natural sites, and 23 mixed sites. More information about each site, along with the entire World Heritage List, can be reviewed at www.unesco.org//whc/nwhc/pages/news/main2.htm.

"Linking Wilderness Research and Management" Series Available Online from the Aldo Leopold Wilderness Research Institute

The Aldo Leopold Wilderness Research Institute has developed a set of four annotated reading lists in order to help land managers and others access scientific information relevant to protecting and restoring wilderness and similarly managed lands, as well as the myriad of values associated with such lands. The publications are available online at http://leopold.wilderness .net/resapp.htm.

Titles to date include:

Volume 1–Wilderness Fire Restoration and Management

Volume 2–Defining, Managing, and Monitoring Wilderness Visitor Experiences

Volume 3–Recreation Fees in Wilderness and Other Public Lands

Volume 4–Understanding and Managing Invasive Plants In Wilderness

References in these reading lists have been categorized to draw attention to the relevance of each publication and then organized to provide a logical framework for addressing the issue. Each volume begins with references necessary to understand the overall issue and then provides references useful for identifying management goals, understanding influences on those goals, and finally, for selecting and implementing management approaches.

UNESCO/UNEP Releases Mountain CD

In tribute to the International Year of Mountains 2002, the United Nations Educational, Scientific and Cultural Organization (UNESCO) has produced a CD-ROM in collaboration with the United Nations Environment Programme (UNEP)–World Conservation Monitoring Centre. The CD-ROM, which includes an overview of the main UNESCO programs operating in mountain regions, provides information on mountain World Heritage Sites and Mountain Biosphere Reserves. The information contained on the CD Rom is also available online at http://valhalla.unep-wcmc.org/unesco/index.htm

Judge Rejects Landowner's Bid To Build Road Into Absaroka-Beartooth Wilderness

Billings, Montana—A federal judge has rejected a landowner's lawsuit to require nearly nine miles of new road construction to reach a private parcel of land deep within Montana's Absaroka-Beartooth Wilderness Area. In an April 2 ruling, U.S. Magistrate Judge Richard W. Anderson concluded that existing trail and helicopter access to the landowner's property was

adequate to permit use of the property while preserving "the pristine and primitive nature of the wilderness." "This ruling protects one of our nation's most outstanding wilderness areas from a misguided road proposal, but it also represents a victory for the entire wilderness system," said Earth Justice attorney Tim Preso, who represented a coalition of conservation groups in opposing the landowner's lawsuit. "The law does not require destruction of the public's wilderness every time somebody buys property within a wilderness area and wants to drive to it." The court ruling was in response to a lawsuit filed in December 2000 by the Absaroka Trust, a trust established by Livingston resident James Sievers. The Trust sought to overturn a decision by the U.S. Forest Service denying a request to build a 20-foot-wide gravel road through the Absaroka-Beartooth Wilderness Area to access a 120-acre private inholding property consisting of former mining claims. The Forest Service estimated that 8.6 miles of new road would be required to reach the property. The Trust sought the proposed road to log and mine the inholding property, and to construct and operate a hunting and fishing lodge. In its lawsuit, the Trust asked the Court to order the Forest Service to permit road construction and to require the taxpayers to pay all construction costs. The Court's ruling rejected that request, finding that existing nonmotorized access to the property was adequate under federal law.

Reprieve for ANWR: Arctic Drilling Rejected by U.S. Senate

The U.S. Senate defeated a measure on April 18 to allow oil exploration in the Arctic National Wildlife Refuge (ANWR), killing what Republicans call a central part of President Bush's plan to revamp America's energy policy. By a vote of 46 to 54, senators not only failed to overcome a Democratic-led filibuster but also fell short of mustering the 51 votes needed to argue that the majority of the Senate supports drilling in ANWR. Eight Republicans abandoned Bush and joined with most Democrats in rejecting drilling in ANWR. "There are other, more feasible options for … reducing national foreign oil dependence," said Sen. Lincoln Chafee, R-R.I. Although drilling in ANWR passed the House and, therefore, will still be part of the House–Senate negotiations over energy reform legislation, the vote on April 18 makes it unlikely to pass the Senate at any point. Conservation groups have vowed to introduce wilderness legislation for ANWR.

IJW Solicits Nominations for the Keith Corrigall Wilderness Stewardship Award

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

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

The "Keith Corrigal Award for Excellence in Wilderness Stewardship" is given annually to an individual or team of persons whose efforts to protect and/or steward wilderness is worthy of special recognition. Nominees may be professionals or citizens involved in wilderness work. Nominations are solicited until August 30 each year for the annual award. Submit a 500 word statement and seconding letter to: Steve Hollenhorst, *IJW* Digest editor, ***IJW* Corrigal Award** [stevenh@uidaho.edu] describing why the award is deserved, with complete snail mail, e-mail and telephone contact information for the nominee(s) and the person(s) making the nomination.

Protected Area Management Training Seminar

The University of Montana, Colorado State University, and the University of Idaho, in collaboration with the U.S. Forest Service International Programs Office, will again deliver the International Seminar on Protected Area Management August 8–24, 2002. Participants will discuss and see examples of innovative approaches to critical protected area management issues, including resource assessment and planning tools, techniques to address visitor interests and impacts, and mechanisms to reconcile resource protection with development pressures. For further information, please visit www.fs.fed.us/global/is/ispam/welcome.htm or contact Dr. James A. Burchfield by phone at 1-406-243-6650 or by e-mail, jburch@forestry.umt.edu.

Letters to the Editor

Dear *IJW,*

The BLM and Student Conservation Association (SCA) California Primitive Skills Team is honored to receive the first Keith Corrigall Wilderness Stewardship Award sponsored by the *International Journal of Wilderness* and the WILD Foundation. Keith was a wonderful mentor, and we all think he would have been proud of the work being carried out by the BLM/SCA Primitive Skills Team.

We in the wilderness management agencies spend most of our time and dollars defending wilderness boundaries from illegal uses, dealing with users, or completing compliance documents and plans. And when we do undertake on-the-ground work, agencies too often use the excuse that the work cannot be done without the use of motorized equipment or vehicles (because of cost and convenience). The Primitive Skills Team is proving that we *can* do on-the-ground work and that we *can* use primitive skills and tools, and often for less cost to the government than using motorized equipment. These young adults in the SCA are doing with primitive skills what we once thought could only be accomplished by motorized means.

But the most important feature of the Primitive Skills Team is that they are experiencing wilderness areas and a wilderness ethic. My hope is that this will lead to a cadre of future wilderness managers steeped in how to use primitive skills for wilderness protection.

My long-term goal is to establish an interagency Primitive Skills Center in the Desert Southwest to expand the number of teams and primitive skills expertise. These teams could then be made available to help wilderness managers complete more on-the-ground restoration work whenever and wherever it's needed. We need to protect and enhance the values of wilderness, and our future depends on giving young adults opportunities such as this!

Thank you for honoring the work of the BLM/SCA Primitive Skills team.

Sincerely,

Paul Brink
BLM California Wilderness Coordinator
pbrink@ca.blm.gov

The BLM/SCA Primitive Skills Team building barricades to exclude vehicles from wilderness.

Continued on next page

Dear *IJW,*

Please allow me to alert *IJW* readers to the fact that northwest Pennsylvania's Allegheny National Forest (ANF) will formally begin the public process of revising their Land and Resource Management Plan (LRMP) this October, providing an important opportunity to advocate new federal wilderness designation in the Forest. The LRMP is a 10–15-year document that dictates management direction for the entire ANF that is Pennsylvania's sole national forest.

The ANF has been one of the United States' most heavily utilized national forest areas since occupation by European settlers began in earnest in the mid-19th century. Today, Pennsylvania is significantly underrepresented in terms of land designated as wilderness under the 1964 Wilderness Act (which was championed by Howard Zahniser, a native of Tionesta, Pennsylvania, located on the southwest boundary of the ANF). The existing Hickory Creek and Allegheny Islands wilderness areas total approximately 3,617 hectares, or less than 2% of the 207,617-hectare ANF. The mean for national forest land designated as wilderness nationally is 18%. The current LRMP for the Allegheny states that "It must be concluded that the demand for wilderness experience on the ANF is very high, given that half the country's population lies within a day's drive of the Forest. … It seems obvious that the demand for wilderness designation on the Forest is high, and the available supply in the regional area is low."

Pennsylvania Senators Hugh Scott and Richard Schweiker strongly advocated for ANF wilderness during the Eastern Wilderness Areas Act (EWAA) debate in 1974. Unfortunately, Congressman Albert Johnson, who represented the region at the time, blocked inclusion for the ANF in the EWAA when the bill reached the U.S. House of Representatives. At least five parcels retaining significant wilderness attributes exist in the ANF. These potential additions to the National Wilderness Preservation System could total as much as 16,000 hectares depending on final boundary placement.

Friends of Allegheny Wilderness is leading a campaign to complete the unfinished business begun by Senators Scott and Schweiker to preserve in perpetuity significant representations of the Allegheny Plateau forest. Of particular note is our effort to gain wilderness protection for a 1,670-hectare tract of hemlock-beech old-growth in the upper reaches of the Tionesta Creek drainage known as the Tionesta Scenic and Research Natural Areas (Johnson, N.L. 2001. A proposal for Tionesta wilderness designation in the Allegheny National Forest, Pennsylvania, USA. *Natural Areas Journal* 21: 338–345).

To get involved in the public process of LRMP revision, write to: Kevin Elliott, Supervisor, Allegheny National Forest, 222 Liberty Street, Warren, PA, 16365. It is vital that the Forest Service receive recommendations in the earliest stages of the revision process so that wilderness will be incorporated in their LRMP "need for change" documentation.

For more information on wilderness potential in the ANF, please contact Friends of Allegheny Wilderness at the following address.

Sincerely,

Kirk Johnson
Executive Director
Friends of Allegheny Wilderness
220 Center Street
Warren, PA 16365
814-723-0620
alleghenyfriends@earthlink.net
www.pawild.org

Book Reviews

Edward Abbey: A Life

By James M. Calahan.
2001. University of Arizona Press, Tuscon. 357 pp., $27.95 (cloth).

You know someone has reached icon status when half the population label you the devil incarnate, and the other half a national hero. Such is often the reaction to Edward Abbey, whose Monkey Wrench Gang and Earth First! escapades would no doubt be labeled "environmental terrorism" in today's political climate, but who is also recognized by many as one of the most influential environmental writers and activists of the 20th century.

James Calahan's biography of Edward Abbey indicates how complex he was, and how his life was riddled with contradictions. It is easy to admire Abbey's commitment to wilderness, especially his beloved desert landscapes in the American Southwest, and the quality and uniqueness of his writing style when describing these areas; *Desert Solitude* alone is one of the most influential "nature" books ever written. Yet it is equally hard to understand Abbey's sexist attitudes towards women (he had five wives, including an 18-year-old wife when he was 47, and rarely practiced monogamy) or his inability to practice what he preached: in his own words, "I wanted a life of freedom, passion, simplicity; I lead instead a life of complicated deals, sloth, acedia and vanity" (p. 219).

Indeed, Abbey's public persona was very different from his reality. For example, Abbey did not identify himself as a "nature writer": he longed to be known as a novelist, and fell on nature writing simply as a means to survive. Moreover, Abbey was extremely skillful in creating a cult image that became increasingly difficult to escape: as he noted in his journals, "The Edward Abbey of my books is largely a fictional creation: the true adventures of an imaginary person. … Somewhat of a recluse, emerging rarely from his fictional den only when lured by money, vice, the prospect of applause" (p. 20). As Calahan notes, "Abbey's writings built a politicized public persona for him, while behind this persona was a man much more interested in his own private life of friendships and sexual relationships, which proceeded from happiness to difficulty and disaster" (p. 151).

But these complexities and inconsistencies perhaps explain why his writings became, in the words of Wallace Stegner, "the burrs under the saddle of complacency … he had the zeal of a true believer and a stinger like a scorpion when defending the natural, free, unmanaged, unmanhandled wilderness of his chosen country" (p. 267). Perhaps the greatest value of Abbey's writings is that they still challenge us to maintain our battles for wilderness and to serve as a gadfly in our flawed civilization.

James Calahan has ably provided a passionate, detailed view of Edward Abbey's life—warts and all—reminding us that despite his human failings, Edward Abbey was a giant of a man, a person whose message still rings clear from desert rimrock to rimrock in contemporary society and, I expect, for future generations to come. Long may his words echo.

Review by JOHN SHULTIS

The Porcupine Wilderness Journals

Editors Christopher Julian-Fralish, Stacey Julian-Fralish and James Julian-Fralish.
2001. The Stacis Group, Carbondale, IL. 356 pp., $15.95 (paper)
(See www.wildernessjournals.com/purchase.htm for purchase details).

A busy academic life and the associated lack of time for wilderness contact have, once again, conspired to increase my stress levels, decrease the amount of joy available in my life, and give me a few more grey hairs. But I began to devour *The Porcupine Wilderness Journals,* like a hobo welcomes a steaming hot coffee on a cold winter's day; the passages allowed me to vicariously hike the beautiful landscapes of the Porcupine Mountain Wilderness Area along the shores of Lake Superior in Michigan. For over 50 years, journals have been provided in 16 backcountry cabins in the "Porkies", as the area is affectionately known among its users. The editors have collected the musings and artwork of thousands of visitors and distilled them into a wonderful collection of vignettes that reflect the joy that such

Continued on next page

wilderness areas bring: from the silly to the serious, from the poetic to the prosaic, from the joyous to the melancholy, an incredible breadth and depth of emotions can be found in these pages.

For example: "I am here with my ten year old son … I hope to instill in my son a love and respect for wilderness, and a self-confidence and self-sufficiency that only the wilderness can teach. But will there be any place for wild things by the time he is a man? I don't know. It's easy to despair and lose hope. But out here I am renewed and again my will to fight for a place that man has not and will not manipulate for profit burns anew. The fight to preserve the wilderness is the fight to preserve the human spirit. It cannot be surrendered." Or: "Adding my thoughts by flashlight—moon sitting on the horizon with millions of stars to keep it company. Steady breathing from buddies Daryl and Emma keeps beat to the sound of the river. Many different feelings here, mind always a-drifting."

I wish there was more opportunity for quoting visitors. As there is not, I can only give my highest recommendation to this book and hope that reading through the deeply emotional messages, hopes, and insights will help restore other readers' faith in the importance of fighting to create and defend wilderness areas like the "Porkies." It would make an excellent companion both at home or on your next wilderness trip; at either location, it will reaffirm the incredible range and depth of benefits obtained from wilderness use and the value of wilderness in contemporary society. In my time of stress, I needed this book: the writers reminded me of what is real.

Review by JOHN SHULTIS

Ecological Integrity: Integrating Environment, Conservation, and Health

Editors David Pimentel, Laura Westra, and Reed Noss.
2000. Island Press, Washington, DC.
400 pp., $35.00 (paper).

The conceptual lens we use to manage wildlands is constantly evolving. Not too long ago, land managers believed in the concept of ecological succession; it seemed eminently logical to manage lands for a "climax" state, also assumed to be the state of wild lands when Europeans first entered the New World. However, a new framework was required when the concept of the climax forest, and thus of a static, "optimum" landscape was debunked. Disturbance began to be identified as the primary regulator of landscapes.

In order to adapt to this new vision, a new conceptual framework—ecological integrity (EI)—was adopted. If change is constant, and a crucial component of the landscape, then the landscapes' overall integrity allowing it to adapt to disturbance and change seemed to be a paramount concern. EI is thus defined as "an ecosystem's undiminished ability to continue its natural path of evolution, is normal transition over time, and its successional recovery from perturbations" (p. 387).

In 1992, the Global Integrity Project (GIP) brought together an interdisciplinary group of researchers to address the cumulative problems of threats to the well-being of humans, the degradation of wild lands and waters, and our unsustainable economic system. That is, the GIP attempted to address not only the knotty issue of defining and measuring EI, but to champion this concept as a means to save humanity and Earth itself from eventual destruction.

It is an audacious task, but *Ecological Integrity* provides a fascinating, compelling analysis of the dangers facing humanity/wild lands and the role EI serves in maintaining ecological processes. Reflecting the objectives of the GIP, the book is divided into six sections: (1) the concept of EI (two chapters); (2) historical and philosophical discussions of EI (four chapters); (3) biophysical and social dimensions of EI (seven chapters); (4) human and social health and its relationship to EI (three chapters); (5) the economics and ethics of achieving EI (five chapters); and (6) recommendations for maintaining EI (one chapter).

This book contains a wonderfully wide set of disciplinary approaches to the issue of EI, incorporating both biophysical and human dimensions. The role of wild lands and protected areas in maintaining EI are incorporated throughout the book, with many authors using wilderness to define and measure baseline EI. Like the related Wildlands Project, the GIP re-enforces the great need for wildlands to ensure our planet's EI, emphasizes the need for significant buffers and corridors around wild lands, and advocates for rapid and significant changes to our economic and political systems to ensure that humans do not make the earth uninhabitable.

Although the changes recommended by the authors of *Ecological Integrity* will be seen as extreme to many people, the book provides a wide-ranging, unflinching insight into some of the problems facing EI and provides a state-of-knowledge assessment of what we can do to maintain EI, both for its intrinsic value and humanity's self-interest.

Review by JOHN SHULTIS