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—John C. Hendee
IJW Editor-in-Chief

On the Cover

FRONT: Cheetah © Suzi Esterhas, International League of Conservation Photographers and Minden Pictures.

INSET: Fish Eagle, Zambezi River, Zambia © Vance G. Martin (www.wild.org).

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

Roads, Houses, and Wilderness

BY H. KEN CORDELL

Early champions for a federal system of protected lands, including wilderness, could not have imagined what is now happening on and around the lands they sought to protect. It seems that almost anywhere there are views and access to the protected mountains, valleys, and rivers that make up the federal land system, there is human development. We are witnessing a vast and irreversible transition of the American rural landscape.

When the federal land system was being organized, most of the land being included was distant from human habitation. Most nearby private land was used for grazing, timber, mining, or tourism. When I was a kid traveling from North Carolina west on vacation with my family, I seem to remember it as rare to see housing developments along the rural roads of Montana, New Mexico, and Oregon. Now it is rare to drive the roadways William Least Heat-Moon called "blue highways" and not see new homes, resorts, towns, communications towers, roads, and other development. Of course, some people look at development and see it as good for the economy. Others look at it and see it as bad for the "ecology." Whether seen as good or bad, development along the borders of public land is an accelerating trend with no apparent end.

In 2005 a U.S. Forest Service team reported that in the 1990s, development of private forest was occurring at a pace of about 1 million acres (404,858 ha) annually. They predicted that by 2030, 44 million acres (17.8 million ha) more may be developed (http://www.fs.fed.us/projects/fote/). A forthcoming second report from this team reports that about 12 million acres (4.85 million ha) of private lands within 10 miles (16.1 km) of national forest lands (5%) are likely to see increased development by 2030. A number of individual national forests are projected to have increased housing density on at least 25% of adjacent private lands. Some of these affected national forest lands are designated wilderness.

In our recent book, *The Multiple Values of Wilderness* (Cordell et al., 2005, Venture Publishing), we examined proximity of designated wilderness to human settlements. Our estimates showed that almost 41% of the country's population lives within 50 miles (80.6 km) and nearly 17% lives within 25 miles (40.3 km) of wilderness. As the numbers and proximity of people to wilderness grow, there are a number of challenging consequences—greater withdrawals of ground and surface water, disruptions to wildlife habitat, and more roads. In our book we note that more than 40% of federal wilderness in the western states was within 3 miles (4.8 km) of a road. We see no factors emerging that would decrease the development trend near wilderness. Examples include the 72,000-acre (29,150-ha) Black Ridge Canyons Wilderness Study Area in Colorado where development moves steadily toward the area's boundary. Visitor solitude concerns aside, don't we all wonder where the near-boundary development trend is taking us—and wilderness conditions?

As is always the case, the articles in this issue of *IJW* will help us ponder this and other crucial questions. Monitoring wilderness characteristics, measuring impacts, and valuing wilderness and related experiences are the subjects in this issue of *IJW*.

H. KEN CORDELL is pioneering scientist and project leader in Forest Service research and a member of the editorial board of *IJW*.

SOUL OF THE WILDERNESS

On Trail in the Wilderness

BY CAROL BATRUS

In successive IJW *issues we have had authors tell their first-person stories about being on the iMfolozi trail in South Africa. In the previous issue of* IJW *(December 2006), Doug Williamson told his story, "Walking with Magqubu: Adult Reflections on Boyhood Memories." The following story is about the same experience told by Carol Batrus, who took her trip at a different time in history and under different circumstances. Two different people with different backgrounds but with similar wilderness experience results.*

It is June 2000. I live in a remote, primitive Zulu community, a century removed and half a world away from all that I have known. I came to help others adapt to their changing environment. It was the environment that profoundly changed me. Being "on trail" with the Wilderness Leadership School in South Africa brought me home.

We are seven campers, three men and four women, standing at the boundary of the Umfolozi Wilderness, one of the oldest game reserves in Africa, anxious to begin our five-day trail experience. Beyond this boundary live lions, rhinos, elephants, leopards, hippos, giraffes, zebras, buffalo, hyenas, jackals, baboons, warthogs, crocodiles, antelopes, ticks, scorpions, snakes and more. The school's goal is to have us experience the natural environment in as pure a form as possible. Each participant carries a mat and sleeping bag (no tents), a few items of clothing, and a share of the cooking utensils and food for the group. The two trail leaders, Paul and Michael, tell us to leave watches, books, and extra food behind in the van. While we reorganize, the leaders inspect their rifles and pack bullets resembling small missiles; then Paul announces it's time for our first safety lecture.

Carol Batrus. Photo by Vance Martin.

He tells us that the bush we are entering is rather dense, so it is possible to surprise a rhino, a buffalo, or even an elephant. If an animal feels surprised or threatened, it could behave in "unreasonable" ways. Personally, I have no desire to reason with a rhino—whatever it wants is OK with me. Paul offers a few suggestions:

"When we encounter animals do exactly as Michael and I tell you, your lives depend on it." No problem, glad to oblige.

"If we give a command to drop and climb, drop your backpack immediately, and climb the closest tree. Climb as far up as you can because rhino are much larger than you might suspect." Why didn't I learn to climb trees as a kid?

He tells a story of a group of campers treed by a rhino. They didn't climb quite far enough and the annoyed rhino managed to dislodge the arboreal refugees. It is highly unlikely that anything like that will happen, but we should be aware.

"If we give a signal to be quiet and still, don't move, don't even blink." Thankfully I've learned to meditate and can hold quite still.

"Animal behavior is not predicable. Let's all pay attention and have a safe and wonderful time." Pay attention? I won't let him out of my sight.

We heave our backpacks and head in. After 20 minutes we find animal tracks that our guides call spoor. In hushed tones—Paul doesn't want to scare away any animals—he shows us the different types of spoor: elephant, rhino, hyena, and buffalo. We walk a few yards more. A white rhino and her calf stand about 100 feet (30.5 m) away, calmly browsing. They appear ancient and otherworldly. I remind myself, this isn't *Jurassic Park*: they live here.

Our intended camp is on the other side of the White Umfolozi River. The guides warn us that the river is full of crocodiles so we need to cross quickly. Crocs can weigh more than 2,000 pounds (907 kg) and are incredibly fast. Michael tries to reassure us that the "cold" water (it's June and winter in the Southern Hemisphere) makes the crocodiles more sluggish than in the warmer summer months. Very comforting. Paul tells us to watch for antelope and buffalo. They cross at the shallowest part of the river. In a few minutes we see a small group of impala spring across the river downstream about 150 yards (137 m). We walk to that site. Paul and Michael load their guns. Paul, gun at the ready, enters the river and crosses, twisting and turning, eyeing the water as he goes. Michael, eyes peeled, covers Paul from the shore.

We watch in stunned silence. Once on the other side, Paul walks back, stopping midriver, and signals to us to cross. Boots off, not a word between us, our eyes betray our unspoken fear. We descend the bank. On the first step, my foot sinks into thick, tenacious mire. On my next step I fall to my knees, backpack falling forward and pushing me down. I can't get up. I feel helpless and foolish. Michael descends the bank and pulls me to my feet. I am the last to reach the far shore. We sit on the ground about 20 feet (6 m) from the water's edge wiping sand off our feet, pulling on socks and hiking boots. Michael points to a crocodile 100 yards (91.4 m) downstream from our entry point, sliding into the river. Good lord, what am I doing?

On wilderness trail in the iMfolozi requires attention to your surroundings, and adherence to the instructions of your trail officer. Photo by Margot Muir.

We walk toward our campsite, a rocky, flat area 6 feet (1.8 m) above the river backed by a rock face. As we near the site, I hear loud, raucous, and totally unfamiliar sounds. Paul says it is a baboon colony. The males, called dogs, have enormous canine teeth capable of killing humans. "Select a site for your sleeping bags. Once the baboons know where our territory will be, they will calm down." We gather wood to build a bush fire: three sticks arranged in a triangle to create a small flame. The fire, with a flame, must be kept going all night. We divide the night into seven single-person shifts, and night watch begins.

The first watch stays up, the rest of us retire to our sleeping bags. I lie awake listening to sounds that are new to my ear; unknown animal noises that I am later told are hyena, leopard, toad. … The full moon rests on the east horizon. I try to put words to my emotions: *appreciation*, *trepidation*, *awe*. I must remember where the man who follows my night shift sleeps so I wake the correct person. Locating his spot, I drift to sleep. I awake to a quiet tap on my shoulder. It is my turn for watch.

I crawl out of my sleeping bag, thoroughly shake out my boots, and retrieve my tea mug. My predecessor hands me the flashlight. He kept the fire going and has a pot of water

Waking up overlooking the Imfolozi River. Photo by Margot Muir.

A small bachelor herd of three young kudu bulls. Photo by Margot Muir.

boiling for tea. The night is stunningly still. I walk the perimeter of the camp, poking the flashlight into the darkness. Here we are, little night beasties. You have a whole lot of space to yourselves, no need to come here. I return to the fire and prepare a cup of tea. I sit and listen. I watch the constellations move overhead, feel the stillness, and take comfort in the light of the full moon. I close my eyes to meditate. It is easy to sense the contained energy of the Earth below and the expansive energy of the sky above. I feel harmony, connection, and peace. God is everywhere. It is so obvious. How could anyone doubt it? I feel very protected, blessed, and lucky to be here. Another tour around the camp, another cup of tea, another sit. My watch is regrettably over. Time to rouse the next in line and return to my sleeping bag.

The sun announces day two of life in the wild. Sitting quietly around the fire, the morning starts slowly. We have used all of the water we packed in and are now drinking Umfolozi River water. The water has a repulsive green color with unidentifiable chewy bits floating abundantly on the surface; the smell is reminiscent of an outhouse at a fish-processing plant. Our leaders don't seem too fussy about making sure it boils before drinking it. Drinking the chewy bits is bad enough, unboiled chewy bits in a soup of animal excrement—out of the question!

We break camp then hike in relative silence. On a sandy river beach, we watch as Cape buffalo enjoy a morning drink and crocodiles sun themselves. In open grassland, we see herds of zebra and warthog. We cross a floodplain where the grass is so thick that we can't see our feet. Not a comforting feeling. Paul is leading the walk. His hand flashes up to signal "Halt." He waves at us to back up quickly. He heard the hiss of a Mozambique spitting cobra. Since almost dying from a bite several years previous, he has a healthy respect for getting out of its way. We give the area a wide berth.

Our second campsite is on a cliff overlooking the river. It is late afternoon. We prepare tea to take to the cliff's edge to watch evening events unfold. Three enormous elephants lumber ever so slowly into view. Using their trunks, they snap branches off the trees the way I would pick a blade of grass. One bull elephant seems particularly enamored with the upper branches of a tree. He stands on his hind legs, straining his back as he wills his trunk to reach the topmost branches. He is stretched so high on his hind legs, trunk extended skyward, that he looks like a giant ballerina from a Disney movie. We expect him to topple over backward, but finally he manages to wrap the tip of his trunk around the chosen branch. With the force of a falling building, he drops to the ground, splitting the tree in two. Calmly, delicately, he proceeds to dine on the leaves. When darkness interferes with our view, we reluctantly return to the fire and supper.

Anything eaten in the great outdoors after a day of hiking is enjoyed far beyond its culinary due. We set upon the macaroni and cheese like starved dogs, using our fingers to remove any trace of food left on our plates or in the pot. Our dinner conversation is interrupted by the roar of a lion. Never believe that humans have evolved beyond their primal instincts. The instant the lion roars, my bowels clench and the urge to run—fast—consumes me. A second later, we hear the agonized cry of a beast. Paul says we are listening to lions kill a young Cape buffalo. The camp is silent as the sounds paint a gruesome scene. We listen to the calf's cries as the lions finish the hunt and then we hear the triumphant moans of victory as they eat their evening meal. Quietly, reflectively, we proceed to our sleeping bags armed only with a flashlight for night watch.

The sounds of the night disturb my innocence. For me life has never involved a struggle to survive. I hear lions, leopards, and hyenas performing their roles, bequeathing death, sustaining life. The reality of how exposed I am is ever so much clearer. I feel insignificant pitted against the biological imperative to live. Night watch is solemn and tense, but also expansive, exploring new emotions and a new way of being in relation to nature.

The next morning, aching shoulders surface as a universal complaint. We ask our guides if we may camp a second night in the same spot, allowing us to hike without our packs. We take our plates and pot from last night's dinner down to the river for a cleaning. Soap is not in our guides' vocabulary. Not authentic. They suggest we use the shallow (6-inch-deep/15.2 cm) part of the river and scrub ourselves and the dishes with sand. The guides warn us to avoid the deeper part of the river; crocodiles may be lurking. I give myself a sniff. Not too bad. Certainly not bad enough to justify scrubbing with sand in a crocodile-infested river.

> In five days I have become more alive but less worldly, more enlightened but with fewer answers, and more at peace but seeking truth.

We hang by the river watching animals on the far shore, then head inland. Paul leads us to an area heavily used by rhino. He marches us right into rhino midden (a.k.a. a poop pit). He declares that all of the mysteries of rhino life can be discerned in their poop. He hands me a great glob, proudly instructing me on how one can tell white rhino poop from black rhino poop. Not sure I want to know, but as long as I'm here… . We continue our trek, more animals, more poop, more mysteries uncovered.

Day four arrives. We walk to the beach to observe the morning rituals. A lone elderly bull Cape buffalo suns himself on the sand. When male Cape buffalo become too old to oversee a herd of females, a younger bull replaces them, and the old males leave the herd to live their remaining years in solitude. The rules of nature are forever practical, without a whiff of sentimentality.

Our group is very quiet this morning. After three days of intense exposure to our evolutionary roots we are in a reflective place. Without comment, Paul stands and begins a slow walk downriver. Emerging from the bush into a clearing, we surprise a large group of white rhino cows, young bulls, and calves. They sense us and become agitated. The cows regroup, forming a protective line in front of the younger animals. The guides motion us to huddle up, stand still, and be quiet. Nobody breathes. We are in a tight standoff, neither side moving. Paul and Michael load their rifles and place a second bullet between their teeth. The younger male rhino move into formation. We stand in ossified silence. Time evaporates. Has it been 30 seconds or 30 minutes? Finally the lead rhino slowly turns away, dissipating the tension. We back up and exit the clearing.

Day five, the last day. We all want a bath. One camper asks to learn more about tracking. Paul says there is a crocodile-free swimming hole in a tributary of the Umfolozi. He will teach us tracking on our way. We walk beside the stream, spot lots of spoor, and have more lessons of the wild. We find two small pools of water out of view of each other. The men gather at one pool, women at the other. We strip and, as casually as women putting on lipstick in a bathroom mirror,

On trail with the Wilderness Leadership School is all about taking the time to feel, learn, and understand the wilderness, your self, and the connection between them. Photo by Margot Muir.

Continued on page 23

Scaling-up the Minimum Requirements Analysis for Big Wilderness Issues

BY DAVID N. COLE

The concept of applying a "minimum requirements" analysis to decisions about administrative actions in wilderness in the United States has been around for a long time. It comes from Section 4(c) of the Wilderness Act of 1964, which states that "except as necessary to meet minimum requirements for the administration of the area for the purposes of this Act … there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area." The concept interjects the notions of flexibility and compromise, suggesting that wilderness purposes might on occasion be best served by allowing generally prohibited uses. However, it is clear that such allowances should be the minimum necessary to achieve the purposes of the Wilderness Act.

Recently, the four agencies that manage federally designated wilderness in the United States developed a Minimum Requirements Decision Guide process to assist managers in making wilderness stewardship decisions regarding the appropriateness of administrative actions (http://www.wilderness.net/mrdg/). The process guides managers through two steps that lead them to decisions: (1) that an administrative action is necessary (or not); and (2) if it is necessary, that the action is the minimum activity.

Even though the Wilderness Act only uses the minimum requirement terminology in relation to generally prohibited uses in wilderness, the concept has been used to address other issues. Minimum requirement concepts are also applied to special provisions (Sec. 4d) in the Wilderness Act, in that "such measures may be taken as may be necessary in the control of fire, insects, and diseases" and "commercial services may be performed … to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas." Hendee et al. (1978) applied the minimum requirement concept to management of recreation in wilderness. They proposed the principle that only the minimum regulation necessary to achieve wilderness recreation management objectives should be applied. Here, the notion of compromise is even more fundamental. Unconfined recreation (freedom from regulation) is an important aspect of wilderness character, but so are solitude and minimal recreation impacts. Wilderness character can be optimized by crafting a compromise between these conflicting objectives.

The authors of the Minimum Requirements Decision Guide designed it specifically to address the Section 4c prohibited uses. Most often the guide is used for project or site-specific planning—whether or not to restore an administrative cabin or replace a washed-out bridge, whether to use chainsaws or crosscut saws to clear blowndown trees across a trail, whether to use helicopters or mules to move supplies. The authors of the guide note, however, that the process can also be used for programmatic planning and comprehensive land planning. However, where the stewardship issue is something other than a prohibited use, a different type of minimum requirements analysis is needed.

Stewardship issues other than the Section 4c prohibited uses often must be dealt with at larger spatial and temporal scales. They often involve a resource inside and outside a designated wilderness and can require analyses that cross wilderness boundaries. In particular, they

often involve compromising one of the qualities of wilderness character (Landres et al. 2005) in order to avoid compromising another quality of wilderness character or compromising two conflicting qualities simultaneously. Such analyses are much more complex than project-specific analyses, and few precedents exist.

Although it is sometimes assumed that the series of questions in the Minimum Requirements Decision Guide analysis provide a useful guide for all stewardship issues and all levels of planning, some adjustment of procedures is necessary. In particular, the wording and relative importance of questions and how they are addressed may differ. In this article, I propose some ways that the spirit of a minimum requirements analysis could be applied to some of the bigger issues in wilderness stewardship—those that require planning at large spatial and temporal scales, involving multiple resources and jurisdictions.

Big Issues in Wilderness Stewardship

Wilderness character is influenced by the cumulative effect of myriad threats and actions. This is why wilderness managers need to be concerned about the appropriateness of actions that, to some, seem relatively unimportant because they occur infrequently, are short-lived, and are local in effect. Despite the need to be concerned about such small-scale administrative actions as helicopter landings and chainsaw use, managers increasingly need to attend to bigger wilderness issues as well. Near the top of the list must be issues related to maintaining and/or restoring wilderness ecosystems impacted by human influence.

Wilderness character is influenced by the cumulative effect of myriad threats and actions.

Ecological manipulation in wilderness is perhaps the most challenging emerging dilemma confronting managers (Cole 1996, 2000). Wilderness character is declining almost everywhere as naturalness wanes in the face of invasive species, fire suppression, air pollution, and a host of other threats (Cole and Landres 1996; Franklin and Aplet 2002). And yet, administrative actions taken to blunt or counteract these assaults also have a detrimental effect on wilderness character. Intentional manipulation of wilderness ecosystems conflicts with the characteristic that most uniquely defines wilderness, its being "untrammeled by man." The important symbolic value of wilderness as a place of humility and restraint, not controlled by humans (Cole 2005), is adversely affected when intentional manipulation occurs regardless of why such actions are taken or how short-lived such actions are. Moreover, if these issues are dealt with by compromising on a case-by-case, wilderness-by-wilderness basis, our wilderness system will gravitate toward homogeneity and mediocrity (Cole 2003). To maximize the value of the wilderness system, planning and the crafting of compromise needs to occur at large spatial scales.

Applying Minimum Requirement Concepts to Big Wilderness Issues

How can we work through the dilemma of ecological restoration in wilderness to develop compromises between the naturalness and untrammeled qualities of wilderness character at large spatial scales? One approach is to apply the same concepts that are central to the Minimum Requirements Decision Guide, taking the minimum action necessary to optimize wilderness character. Some subtle adjustments of the process are needed, however. The decision in the first step shifts from "Is any administrative action necessary?" to "What outcome is desirable?" All six questions typically asked in the first step of the analysis are still relevant. However, most attention needs to be devoted to exploring conflict between different components of wilderness character (e.g., untrammeled and natural), deciding how to compromise between components, and codifying the compromise in specific descriptors of desired future conditions. Since these desired outcomes will apply to wilderness, there may be little ability to resolve the situation by taking action outside wilderness.

The second step also shifts, primarily due to the expansion of spatial scale. Instead of determining the minimum activity, the goal is to decide which activities conducted in which places are the minimum necessary to achieve the desired outcome. A more obtrusive action conducted in fewer places in wilderness might be considered the minimum when compared to a less obtrusive action conducted in more places.

Protecting Hemlocks in the Southeastern United States

An excellent example is provided by planning efforts of the national forests in North Carolina devoted to preservation of hemlocks (USDA

Figure 1—Landscape view from Clingmans Dome, Great Smoky Mountains National Park. Photo courtesy of the National Park Service.

Forest Service 2005). Two species of hemlock (eastern and Carolina) are experiencing high rates of mortality due to a small aphidlike insect, the hemlock woolly adelgid, native to Asia and first detected in the eastern United States in 1951. Eastern hemlock is the second most common conifer in these forests, is a significant component of old growth forests, notably in some wilderness areas, is often important in riparian communities, and often lends a distinctive, scenic component to landscapes (see figure 1).

By 2001 the adelgid had spread to the forests of North Carolina and, by 2004, mortality of hemlocks was occurring. Research conducted elsewhere suggests that tree mortality can occur in as few as three years and that more than 90% mortality of hemlocks can be expected within 10 to 12 years of a stand becoming heavily infested (Mayer et al. 2002). Without intervention, it is likely that most hemlocks—among the oldest-lived trees (600-plus years) in the East—would be lost from eastern forests. Carolina hemlock might go extinct, since its range is primarily in western North Carolina. Extinction of the more widely distributed eastern hemlock is also possible. Even with intervention, the result of the adelgid infestation will be a loss of biodiversity, degradation of aquatic habitat and scenic values, and a reduction in wilderness character, through a loss of naturalness. Many of the finest hemlock stands, in terms of condition, age, and character, are in wilderness. Moreover, many of the most intact ecosystems in the East are in wilderness.

Intervention options exist that appear capable of protecting hemlocks. Injection of the insecticide imidacloprid into the soil close to trees kills the adelgid, resulting in dramatic recovery (Steward and Horner 1994). In close proximity to water and where soil is highly permeable, tree stems must be injected, a technique that can damage trees and is less long lasting. In addition, introduction of nonnative beetles (from China, Japan, and the northwestern United States) can reduce adelgid populations sufficiently to allow infested trees to recover (Cheah and McClure 2002).

The choice facing the Forest Service, both inside and outside wilderness, was whether to let hemlocks disappear from these forests or to use insecticides and introduction of another nonnative species to protect these trees. Wilderness character was doomed to decline as soon as the first adelgid arrived in the United States. The choice facing planners was which aspects of wilderness character to protect, where, and how. As noted before, wilderness system values are optimized when different compromises are reached in different places because outstanding examples of all components of wilderness character are preserved at least somewhere in the system.

The Decision

In this case, the Forest Service decided to compromise both the untrammeled and naturalness components of wilderness character, by intervening in some but not all stands. They adopted an objective of maintaining reproducing populations of eastern and Carolina hemlock throughout their historical and elevational range. This objective is quite different from such possible objectives as protecting all hemlock stands or protecting stands wherever resources can be mustered to protect them. Their decision for the first step of a minimum requirements analysis was that administrative action is necessary because the desired outcome in wilderness is maintenance of some hemlock stands in wilderness. This decision could not have been made without a decision about desired outcomes in wilderness.

The planners used the concepts of the metapopulation and minimum viable population size to decide how

many trees and conservation areas to protect, as well as the minimum intervention needed to protect the trees in each conservation area. The outcome of the second step in the minimum requirements analysis, then, was a decision about which specific actions in which specific places collectively constitute the minimum necessary. Ultimately, from nearly 400 hemlock stands, they decided to release predatory beetles in 159 hemlock areas (typically 125 acres [50.6 ha] in size) across the forests. To ensure maintenance of an adequate gene pool until effective biocontrol is established, trees will be treated with insecticide in as many as half of these areas. The minimum activity is not the least obtrusive single action. Rather it is the combination of actions, varying in obtrusiveness and applied in the minimum number of stands, that minimizes loss of the untrammeled quality of wilderness character while meeting the desired outcome.

Since the objective of maintaining hemlock in some of these forests applies equally inside wilderness and outside wilderness, many of the treated stands will be in wilderness. It might have been possible to meet the overall objective of maintaining reproducing populations of eastern and Carolina hemlock throughout their historical and elevational range by only intervening in stands outside wilderness, but this would have impacted wilderness character unacceptably. The keys to deciding what to do in wilderness, then, came from deciding about desired future conditions and how to compromise between the components of wilderness character, not from attempting to apply interventions outside wilderness.

Although one might disagree with this decision, the process is true to the spirit of the minimum requirements analysis. Primary attention was given to optimizing wilderness character, in this case crafting a desired future condition that represented a compromise between the conflicting components of naturalness and untrammeled (Landres et al. 2005). This compromise was codified in a management objective that defined the desired future condition. A management prescription was developed that was a combination of different treatments being conducted in a carefully specified number of stands. The "minimum" activity designation comes as much from intervening in the minimum number of places as from the minimum obtrusiveness of the intervention.

Whitebark Pine

In the western United States, populations of whitebark pine are being decimated by the nonnative pathogen that causes whitepine blister rust. Whitebark pine loss is aggravated by fire management policies, particularly by suppression of fires. This tree species grows at timberline, and much of its range is in wilderness, from Washington south to southern California and east to Idaho, Montana, and Wyoming. Severe whitebark pine mortality is deleterious to grizzly bear populations (see figure 2), because bears depend on whitebark seeds for a significant portion of their diet (Mattson et al. 1991). Clearly, extensive loss of this species adversely affects wilderness character, through loss of naturalness as well as scenic values.

Figure 2—Grizzly bears are a wilderness-dependent species of wildlife. Photo by George Wuerthner.

As is the case with the adelgid, intervention to protect and restore whitebark pine trees is possible. In particular, some whitebark pines are naturally resistant to blister rust. Such trees can be protected in the wild. Their seeds can be collected and used to restore decimated whitebark populations (Tomback et al. 2001). Such manipulations clearly represent a significant trammeling of wilderness. But, as with hemlocks and adelgids, perhaps the best compromise for wilderness—the way to minimize the aggregate loss of wilderness character at large spatial scales—is to restore some, but not all whitebark pine stands. If so, it is important to use the best available science to prioritize restoration efforts across the high mountains of the western United States, both inside and outside wilderness. Similar

Even though the Wilderness Act only uses the minimum requirement terminology in relation to generally prohibited uses in wilderness, the concept has been used to address other issues.

analyses might be useful for other large-scale manipulations, such as management-ignited fires.

Conclusions

Big wilderness issues are complex and need to be solved at large spatial and temporal scales. Traditional approaches, such as case-by-case decision making and trying to take action outside wilderness, may do more harm than good. The concept of the minimum requirement still provides an appropriate "way of thinking" about these big issues. However, the procedures in the Minimum Requirements Decision Guide need to be modified in order to deal effectively with big wilderness stewardship issues. In particular, more attention needs to be given to describing desired future conditions in as much specificity as possible. This will often require decision makers to make controversial decisions about how to compromise between competing objectives, each of which is championed by a different stakeholder group.

In addition, implementation plans need to be highly place-specific. The most appropriate and minimum activity has as much to do with where action is taken as it does with what actions are taken. This can also be more controversial, because specific places have varied meanings for different stakeholders, and these meanings may translate into opposing positions regarding how those places ought to be managed, even in wilderness.

Last, but not least, dealing with big issues challenges both our scientific and our institutional capacities. Scientific uncertainty increases as scale increases. Although scientists may know how to save an individual hemlock tree or stand from the adelgid, their knowledge about how many trees to protect and how to distribute protected stands across landscapes is more rudimentary. Similarly, the capacity of our institutions to plan decreases as scale increases. Institutions, such as the Forest Service, are highly decentralized. This makes it challenging to develop a large-scale regional plan, in which different values are maximized in different places. The future value of our wilderness system will largely turn on our ability to devise innovative compromises between competing objectives, in a world with fewer win-win solutions. This, in turn, will depend on the ability of science and institutions to plan and optimize value at large spatial scales. **IJW**

REFERENCES

Cheah, C.A.S., and M. S. McClure. 2002. Pseudoscymnus tsugae in Connecticut forests: The first five years. In *Proc., Hemlock Woolly Adelgid in the Eastern United States Symposium*, ed. B. Onken, R. Readeon, and J. Lashomb (pp. 150–65). East Brunswick, NJ.: Rutgers University.

Cole, David N. 1996. Ecological manipulation in wilderness: An emerging management dilemma. *International Journal of Wilderness* 2(1): 15–19.

———. 2000. Paradox of the primeval: Ecological restoration in wilderness. *Ecological Restoration* 18(2): 77–86.

———. 2003. Agency policy and the resolution of wilderness stewardship dilemmas. *The George Wright Forum* 20(3): 26–33.

———. 2005. Symbolic values: The overlooked values that make wilderness unique. *International Journal of Wilderness* 11(2): 23–27.

Cole, David N., and Peter B. Landres. 1996. Threats to wilderness ecosystems: Impacts and research needs. *Ecological Applications* 6: 168–84.

Franklin, J. F., and G. H. Aplet. 2002. Wilderness ecosystems. In *Wilderness Management: Stewardship and Protection of Resources and Values*, ed. J. C. Hendee and C. P. Dawson (pp. 263–285). Golden, CO: Fulcrum Publishing.

Hendee, J. C., G. H. Stankey, and R. C. Lucas. 1978. *Wilderness Management.* USDA Forest Service Miscellaneous Publ. No.1365.

Landres, P., S. Boutcher, et al. 2005. Monitoring selected conditions related to wilderness character: A national framework. Fort Collins, CO: USDA Forest Service Rocky Mountain Research Station General Technical Report RMRS-GTR-151.

Mattson, D. J., B. M. Blanchard, and R. R. Knight. 1991. Food habits of Yellowstone grizzly bears. *Canadian Journal of Zoology* 9: 1619–29.

Mayer, M., R. Chianese, T. Scudder, J. White, K. Vongpaseuth, and R. Ward. 2002. Thirteen years of monitoring hemlock woolly adelgid in New Jersey forests. In *Proc., Hemlock Woolly Adelgid in the Eastern United States Symposium*, ed. B. Onken, R. Readeon, and J. Lashomb (pp. 50–60). East Brunswick, NJ: Rutgers University.

Steward, V. B., and T. A. Horner. 1994. Control of hemlock woolly adelgid using soil injections of systemic insecticides. *Journal of Arboriculture* 20: 287–88.

Tomback, D. F., S. F. Arno, and R. E. Keane, eds. 2001. *Whitebark Pine Communities: Ecology and Restoration.* Washington, DC: Island Press.

USDA Forest Service. 2005. *Environmental Assessment: Suppression of Hemlock Woolly Adelgid Infestations.* Asheville, NC: National Forests in North Carolina.

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Symbolism, Experience, and the Value of Wilderness

BY HERBERT W. SCHROEDER

Abstract: This article explores a psychological perspective on the symbolic value of wilderness that may help in understanding the strong feelings and fascination that wilderness evokes in many people. In Jungian psychology, wilderness is interpreted as a symbol of the unconscious mind. Part of our fascination with wild nature may be that we see in it a reflection of the spontaneous, imaginative side of our own psyche. From this perspective, allowing our senses, feelings, and imaginations to be engaged by untrammeled natural processes is a way of untrammeling our own minds.

Introduction

In the recently published national framework document for monitoring conditions related to wilderness character in the United States, Landres et al. (2005) identify three societal ideals that underlie the Wilderness Act of 1964:

1. Environments in a relatively natural state free from modern human influence.
2. Opportunities for people to experience natural environments free of the constraints of modern civilization.
3. Symbolic meanings representing an attitude of humility and restraint on the part of humans toward natural lands.

The inclusion of symbolic meanings in this list acknowledges an intangible but important aspect of wilderness character. Wilderness character is not determined just by the biophysical condition of the land and the type of recreational use that people make of the land, but also involves a distinctive sense of meaning regarding the relationship of humans to the larger world of nature. Cole (2005) argues that wilderness lands in general symbolize human restraint and humility in interacting with the land—a symbolic meaning that stems from the definition of wilderness as "an area where the earth and its community of life are untrammeled by man" (Wilderness Act 1964). In Cole's view, this particular symbolic value is what distinguishes wilderness from other types of lands that provide similar ecological and recreational values. At the same time, Cole acknowledges that wilderness areas also carry a variety of other symbolic meanings that vary between locales, cultural groups, and individuals.

Herbert Schroeder. Photo by Norm Zuefle.

Symbolic meanings—including but not limited to the particular one emphasized by Landres et al. (2005) and

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Figure 1—Part of our fascination with wilderness may be that in it we see a reflection of the spontaneous, imaginative side of our own mind. Photo courtesy of the Aldo Leopold Wilderness Research Institute.

Cole (2005)—have figured prominently in discussions of wilderness history and philosophy. Nash (1973) remarks that wilderness "is so heavily freighted with meaning of a personal, symbolic, and changing kind as to resist easy definition" (p. 1). Tuan (1974) notes that ambivalent meanings of wilderness are rooted in the contrasting religious symbolism of moral chaos versus divine virtue, whereas Oelschlaeger (1991) characterizes the idea of wilderness in the postmodern context as "a search for … a new creation story or mythology" (p. 321). Social scientists studying wilderness values have also highlighted the importance of symbolism. McAvoy and Dustin (1989), for example, assert that the value of wilderness in contemporary life is mainly symbolic. Kaye (2000) identifies a network of 14 symbolic meanings in writings about the Arctic National Wildlife Refuge, and characterizes the refuge as "an experiential and symbolic landscape of national significance" (p. 74). Williams, Haggard, and Schreyer (1989) discuss how wilderness symbolism may contribute to the development of an individual's sense of personal, cultural, and biological identity. A volume of essays based on C. A. Meier's (1985) address at the 3rd World Wilderness Congress explores wilderness symbolism from the perspective of depth psychology (Hinshaw 1985). Beyond wilderness, symbolic meanings are a key component in discussions of sense of place, place attachment, and spiritual values of natural environments in general (Williams, Patterson, Roggenbuck, and Watson 1992; Williams and Patterson 1999; Williams and Stewart 1998; Schroeder 1992a, 1992b, 1996). Despite the widely recognized importance of wilderness and nature symbolism in the literature, symbolic values are often overlooked or neglected in decision making compared to more tangible ecological and recreational values (Williams and Patterson 1999; Cole 2005).

A comprehensive review of the symbolism of wilderness and nature is beyond the scope of this article. Instead, my purpose is to inquire into one particular aspect of the psychological symbolism of untrammeled nature, which may help in understanding the strong feelings and fascination that wilderness evokes in many people. As general background for this inquiry, I first give a brief overview of some of the different forms and functions that symbols can assume.

The Form and Function of Symbols

The American Heritage Dictionary defines a symbol as "something that represents something else by association, resemblance, or convention; especially, a material object used to represent something invisible" (Morris 1976, p. 1302). In the broadest sense, all human language use and conceptual thought are inherently symbolic, since they use words to represent things that are not words. In this article, however, I use the word *symbol* in a more limited way, to refer to (nonlinguistic) objects, places, actions, and so on that acquire significant meaning through representing something other than themselves.

The relationship between a symbol and what it symbolizes can take many forms. Some symbols are assigned by convention and bear no intrinsic resemblance or relationship to what they represent. For example, the red octagon of a stop sign symbolizes the requirement of stopping a motor vehicle, even though there is nothing about a red octagon that inherently suggests the need to stop. Other symbols are tied to what they symbolize through some intrinsic similarity or association. A sword may symbolize war, because it is a weapon used in waging war. A lion may symbolize strength and courage because its appearance and behavior seem to embody these qualities.

Symbols also vary in the way they function in human thought and experience. Some symbols (e.g., the stop sign) simply denote what they symbolize without adding anything to its meaning. Other symbols help to cognitively structure the domain of experience that they symbolize. For example, in symbolizing a person's life as a journey we use the spatial structure of travel between places as a conceptual model for our experience of living over time (Lakoff and Johnson 1980). Some symbols also have important emotional and motivational functions. They not only represent and help us conceptualize what they symbolize, but evoke strong emotions and motivate us to

action (Progoff 1963). For example, a person's feelings toward their country may come to a focus in the symbol of the country's flag, so that an attack or insult directed at the flag is felt and reacted to as if it were an assault on the country itself.

Emergent Symbols

In the examples discussed so far, the meaning of the symbol and its relationship to what it symbolizes can be described and understood at a conscious level. This is not true for all symbols, however. Some symbols emerge spontaneously from the imagination, and their meaning may be unclear and difficult to articulate (Jung 1964b). Symbols of this kind often carry a strong fascination and emotional charge. They represent something that has great importance but that is not fully accessible to the conscious mind. At the individual level, such symbols may appear in dreams or in works of art. At the cultural level, they figure importantly in the mythological stories and beliefs of a people (Campbell 1968). Symbols of this kind are crucial to the process by which people become aware of and relate to the deepest meanings and values that influence their lives (Progoff 1963). I use the term *emergent symbol* to refer to this type of symbolism.

Throughout human history, elements of nature have functioned as emergent symbols in traditional mythologies, and for at least some modern people nature continues to be a source of fascination and emergent symbolic value (Schroeder 1992a). People sometimes find themselves unable to capture in words the experience of fascination and meaning that wild nature evokes:

> But there are no words that can tell the hidden spirit of the wilderness, that can reveal its mystery, its melancholy, and its charm. (Roosevelt 1910, p. xi)

> The evenings have been really lovely. But the whole experience here has a flavor, an essence that will not be expressed in words. I get so tired of saying "lovely"—but where are the words? (Murie 2004, p. 331)

Ineffable feelings such as these are fertile ground for emergent symbolism. A sense of fascination and emotional depth pervades the landscape, and features such as trees, animals, and mountains may take on a numinous, magical quality that evades ordinary language. Where rational description and explanation fail to grasp the experience, imagination takes over and symbolic images unfold through poetry, art, dreams, and reverie.

Figure 2—We realize the symbolic value of wilderness perhaps most powerfully when we are actually immersed in experiencing a wild, natural environment. Photo courtesy of the Aldo Leopold Wilderness Research Institute.

Wilderness as a Symbol of the Unconscious

Jungian psychology, named after Carl G. Jung, is the branch of psychology that has been most concerned with emergent symbols (Jung 1964a; Jacobi 1973). Jung was also perhaps the only major figure in the history of psychology to take a serious interest in the relationship between humans and wild nature (Sabini 2002). He interpreted particular elements of nature appearing in myths and dreams as expressions of deep structures (archetypes) within the human psyche. More broadly, Jungian psychology has often viewed the wilderness as a symbol of the unconscious mind itself, and has regarded the relationship between modern civilization and nature as an outward reflection of the relationship between the conscious ego and the unconscious psyche (Meier 1985; van der Post 1985; Schroeder 1992a). Poet Gary Snyder echoes this view:

> There are more things in mind, in the imagination, than "you" can keep track of—thoughts, memories, images, angers, delights, rise unbidden. The depths of mind, the unconscious, are our inner wilderness areas. … The conscious

Part of our fascination with wilderness may be that in it we see a reflection of the spontaneous, imaginative side of our own mind.

We realize the symbolic value of wilderness perhaps most powerfully when we are actually immersed in experiencing a wild, natural environment.

> agenda-planning ego occupies a very tiny territory, a little cubicle somewhere near the gate, keeping track of some of what goes in and out (and sometimes making expansionistic plots), and the rest takes care of itself. (1990, p. 16)

In Jungian psychology, emergent symbolism functions as an avenue by which unconscious meaning can play a role in conscious experience. This function is not realized by giving a rational interpretation or explanation of the symbol, but by entering into an open-ended, experiential engagement with it. For Jungian psychologists, symbolic meaning is not a static interpretation attached to an object, but an unfolding process in which a person participates.

In premodern times, according to Jung, the emergent symbolism of natural phenomena helped to maintain a balanced relationship between the conscious and unconscious sides of the mind. But modern consciousness has come to overvalue rational intellect and has thereby lost its connection with the more archaic, instinctive level of the psyche:

> Man feels himself isolated in the cosmos, because he is no longer involved in nature and has lost his emotional "unconscious identity" with natural phenomena. These have slowly lost their symbolic implications. … No voices now speak to man from stones, plants, and animals, nor does he speak to them believing they can hear. His contact with nature has gone, and with it has gone the profound emotional energy that this symbolic connection supplied. (Jung 1964b, p. 85)

The deeper, older level of the human mind still exists, but now expresses itself in the form of neurotic symptoms and social upheavals (Jung 1964b). Jung considered the emergent symbolic process to be an essential antidote for the imbalance in the modern attitude that underlies these symptoms.

Engaging in the emergent symbolic process as envisioned by Jung requires a fundamental shift in attitude for a modern person (Progoff 1963). Rather than pursue a solution to a problem head-on through rational analysis, the person must refrain from deliberate effort and allow symbolic imagery to spontaneously form in dreams or imagination. He or she must be willing to allow the symbolic process to unfold in its own way, to let symbols develop and change on their own without seeking an intellectual interpretation or imposing the ego's conscious goals on them. This attitude of Jungian psychologists toward the emergent symbolic process of the mind parallels almost exactly the attitude toward natural processes expressed in the Wilderness Act of 1964. Whereas the ideal of the Wilderness Act is to have places where nature remains untrammeled and free from the interference of modern culture, the ideal of Jung and his adherents in working with symbols is to have areas of human experience where the symbolic processes of the psyche proceed untrammeled and free from the interference of the rational ego.

Part of our fascination with wilderness may be that in it we see a reflection of the spontaneous, imaginative side of our own mind. The ideal of untrammeled wilderness outwardly mirrors our willingness to allow the creative symbol-making function within our own psyche to unfold free of interference from ego-driven goals. In allowing wilderness to be free, we are symbolically freeing our own minds and hearts.

The Unconscious Mind as Part of Nature

Jung believed that the psyche has an inherited tendency to generate symbolic images that express certain fundamental themes of human existence, which he referred to as archetypes. Because Jung viewed the archetypes as a product of evolution that preceded the development of the conscious ego, he considered them to be literally part of nature. Jung's belief that symbolic meaning can arise from an inherited level of the psyche that is common to all humans may seem contrary to the currently popular view in the social sciences that meanings of natural environments are socially constructed and unique to particular groups and cultures. Certainly, values and meanings of wilderness do vary between communities and societies based on their history, traditions, experiences, and ways of interacting with the land (Williams 2002; Watson 2004). American Indians, for example, associate quite different symbolic meanings with places and landmarks

in the western United States than do more recent arrivals to that region (McAvoy 2002). This fact does not necessarily contradict Jung's notion of archetypes, however. A Jungian approach does not necessarily see all meanings as having archetypal sources; symbolism may also develop from historical, social, or individual factors. Also, when archetypal themes do arise, the specific form they take depends very much on the particulars of the culture and the life circumstances of the individual person.

Jung's ideas have not been widely accepted within mainstream psychology. They have had greater influence within the fields of cultural and religious studies (e.g., Campbell 1968; Bulkeley 1994). Jung's notion of the archetypes is actually somewhat similar to naturalist E. O. Wilson's (1984) concept of "biophilia." Wilson speculates that through evolution the human mind is genetically predisposed toward a fascination with other living organisms and natural environments (especially those that were important to our survival), and that this tendency underlies the symbolic imagery that appears in dreams and cultural traditions.

Because humans evolved in the natural world, it seems reasonable to suppose that human perception and awareness would in some way be instinctively attuned to natural phenomena. According to philosopher David Abram (1996), this was originally the case; but as Western civilization gained increasing mastery over the biophysical environment, we progressively removed our sensory awareness and fascination from nature and transferred it to a humanly created world of concepts captured in phonetic writing. Over the last several centuries of cultural development, our sense of self has withdrawn from its immersion in the larger world of nature and become confined to an interior realm within our own heads. In the process of trammeling nature in the world around us, we also trammeled our own minds:

> There is no longer any flow between the self-reflexive domain of alphabetized awareness and all that exceeds, or subtends, this determinate realm. Between consciousness and the unconscious. Between civilization and the wilderness. (Abram 1996, p. 257)

Abram sees a parallel between the unconscious and the wilderness, but for him the unconscious is not a region within the interior of our psyche. It is a broader field of awareness that extends beyond our self-contained sphere of human concepts and embodies our original sensual, experiential involvement in the surrounding natural landscape.

The unconscious is seen somewhat differently from the perspectives of Jung, Wilson, and Abram, but for all three it appears to be intrinsically linked with nature. The wilderness as a symbol of the unconscious mind is thus more than just a convenient metaphor. The idea of the unconscious points toward a domain of experience in which the division between our own minds and wild nature is not entirely clear-cut. Wilderness emerges naturally as a symbol of the unconscious, because at some level our minds have never entirely lost their continuity with the natural world around us.

Symbolism and Wilderness Experience

Cole (2005) draws a distinction between symbolic values and experiential values of wilderness, pointing out how they may conflict with each other in decision making about wilderness management. This may sometimes be the case, but when considering emergent symbolism it seems more appropriate to view symbolic value and experiential value as interconnected and mutually reinforcing. To realize the value of wilderness as an emergent symbol we must do more than just acknowledge it intellectually; we must experience and participate in the symbolic process directly—and what better place to do this than in the wilderness itself? When emergent symbolic values come into play, a recreational visit to a wilderness area is more than simply an opportunity to enjoy hiking, camping, or fishing. McAvoy and Dustin (1989) propose that a wilderness excursion may function symbolically as a modern-day instance of the archetypal hero's journey, famously described by Joseph Campbell (1968). The journey into wilderness leads then both outward into the natural world and inward into the wild parts of one's own psyche. In this journey, the symbolic values and the experiential values of wilderness are inseparably intertwined.

The symbolic value of wilderness discussed by Cole (2005) and Landres et al. (2005)—wilderness as a symbol of humility and restraint in the human relationship with nature—hardly qualifies as a value if it is grasped merely cerebrally. Only when this meaning is experienced in a more immediate, emotional way does it have the power to motivate a

In allowing wilderness to be free, we are symbolically freeing our own minds and hearts.

person and transform his or her view of the world. We realize the symbolic value of wilderness perhaps most powerfully when we are actually immersed in experiencing a wild, natural environment. Conversely, our experience of wilderness may acquire greater significance and meaning when it evokes an emergent symbolic process that reconnects us with the deepest part of our own minds. When we allow natural processes that are untrammeled by human designs and intentions to engage our senses, feelings, and imaginations, we are—both symbolically and actually—untrammeling our own minds. In so doing, we can rediscover that nature is a part of who we are, and that our own freedom is sometimes best served by allowing other beings to be free of our control. **IJW**

REFERENCES

Abram, D. 1996. *The Spell of the Sensuous*. New York: Random House.

Bulkeley, K. 1994. *The Wilderness of Dreams: Exploring the Religious Meanings of Dreams in Modern Western Culture*. Albany, NY: State University of New York Press.

Campbell, J. 1968. *The Hero with a Thousand Faces* (second edition). Princeton, NJ: Princeton University Press.

Cole, D. N. 2005. Symbolic values: The overlooked values that make wilderness unique. *International Journal of Wilderness* 11(2): 23–27, 10.

Hinshaw, R., ed. 1985. *A Testament to the Wilderness*. Zurich, Switzerland, and Santa Monica, CA: Daimon Verlag and the Lapis Press.

Jacobi, J. 1973. *The Psychology of C. G. Jung*. New Haven, CT: Yale University Press.

Jung, C. G., ed. 1964a. *Man and His Symbols*. New York: Dell.

———. 1964b. Approaching the unconscious. In *Man and His Symbols*, ed. C. J. Jung (pp. 1–94). New York: Dell.

Kaye, R. W. 2000. The Arctic National Wildlife Refuge: An exploration of the meanings embodied in America's last great wilderness. In *Wilderness Science in a Time of Change Conference—Volume 2: Wilderness within the Context of Larger Systems*, comp. S. F. McCool, D. N. Cole, W. T. Borrie, and J. O'Loughlin (pp. 73–80). Proceedings RMRS-P-15-VOL-2. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station.

Lakoff, G., and M. Johnson. 1980. *Metaphors We Live By*. Chicago: University of Chicago Press.

Landres, P., S. Boutcher, L. Merigliano, C. Barns, D. Davis, T. Hall, S. Henry, B. Hunter, P. Janiga, M. Laker, A. McPherson, D. S. Powell, M. Rowan, and S. Sater. 2005. *Monitoring Selected Conditions Related to Wilderness Character: A National Framework*. Gen. Tech. Rep. RMRS-GTR-151. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station.

McAvoy, L. H., and D.L. Dustin. 1989. Resurrecting the frontier. *Trends* 26(3): 40–48.

McAvoy, L. 2002. American Indians, place meanings, and the old/new West. *Journal of Leisure Research* 34: 383–396.

Meier, C. A. 1985. Wilderness and the search for the soul of modern man. In *A Testament to the Wilderness*, ed. R. Hinshaw (pp. 1–17). Zurich, Switzerland, and Santa Monica, CA: Daimon Verlag and the Lapis Press.

Morris, W., ed. 1976. *The American Heritage Dictionary of the English Language*. Boston: Houghton Mifflin.

Murie, M. E. 2004. *Two in the Far North*. Portland, OR: Alaska Northwest Books.

Nash, R. 1973. *Wilderness and the American Mind* (revised edition). New Haven, CT: Yale University Press.

Oelschlaeger, M. 1991. *The Idea of Wilderness: From Prehistory to the Age of Ecology*. New Haven, CT: Yale University Press.

Progoff, I. 1963. *The Symbolic and the Real*. New York: McGraw-Hill.

Roosevelt, T. R. 1910. *African Game Trails*. New York: Scribner.

Sabini, M., ed. 2002. *The Earth Has a Soul: The Nature Writings of C. G. Jung*. Berkeley, CA: North Atlantic Books.

Schroeder, H. W. 1992a. The spiritual aspect of nature: A perspective from depth psychology. In *Proceedings of the 1991 Northeastern Recreation Research Symposium,* comp. G. A. Vander Stoep (pp. 25–30). Gen. Tech. Rep. NE-160. Radnor, PA: USDA Forest Service, Northeastern Forest Experiment Station.

———. 1992b. The tree of peace: Symbolic and spiritual values of the white pine. In *White Pine Symposium Proceedings*, comp. R. A. Stine and M. J. Baughman (pp. 73-83). NR-BU-6044-S. St. Paul, MN: University of Minnesota, Minnesota Extension Service.

———. 1996. Spirit of the forest: Integrating spiritual values into natural resource management and research. In *Dialogues with the Living Earth*, ed. J. Swan and R. Swan (pp. 294–306). Wheaton, IL: The Theosophical Publishing House.

Snyder, G. 1990. *The Practice of the Wild*. San Francisco: North Point Press.

Tuan, Y. 1974. *Topophilia: A Study of Environmental Perception, Attitudes, and Values*. Englewood Cliffs, NJ: Prentice-Hall.

van der Post, L. 1985. Appointment with a rhinoceros. In *A Testament to the Wilderness*, ed. R. Hinshaw (pp. 111–134). Zurich, Switzerland, and Santa Monica, CA: Daimon Verlag and the Lapis Press.

Watson, A. E. 2004. Human relationships with wilderness: The fundamental definition of wilderness character. *International Journal of Wilderness* 10(3): 4–7.

Wilderness Act. 1964. U.S. Code Vol. 16, sec. 1132(c).

Williams, D. R. 2002. Social construction of Arctic wilderness: Place meanings, value pluralism, and globalization. In *Wilderness in the Circumpolar North: Searching for Compatibility in Ecological, Traditional, and Ecotourism Values*, comp. A. E. Watson, L. Alessa, and J. Sproull (pp. 120–32). Proceedings RMRS-P-26. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station.

Williams, D. R., and M. E. Patterson. 1999. Environmental psychology: Mapping landscape meanings for ecosystem management. In *Integrating Social Sciences with Ecosystem Management: Human Dimensions in Assessment, Policy, and Management*, comp. H. K. Cordell and J. C. Bergstron (pp. 141–60). Champaign, IL: Sagamore Publishing.

Williams, D. R., and S. I. Stewart. 1998. Sense of place: An elusive concept that is finding a home in ecosystem management. *Journal of Forestry* 96(5): 18–23.

Williams, D. R., L. Haggard, and R. Schreyer. 1989. The Role of Wilderness in Human Development. In *Wilderness Benchmark 1988: Proceedings of the National Wilderness Colloquium,* comp. H. R. Freilich (pp. 169–80). General Technical Report GTR-SE-51. Asheville, NC: Southeastern Forest Experiment Station.

Williams, D. R., M. E. Patterson, J. W. Roggenbuck, and A. E. Watson. 1992. Beyond the commodity metaphor: Examining emotional and symbolic attachment to place. *Leisure Sciences* 14:29–46.

Wilson, E. O. 1984. *Biophilia*. Cambridge, MA: Harvard University Press.

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Beyond the Symbolic Value of Wildness

BY PAUL M. KEELING

Introduction

There has been much discussion recently about an emerging dilemma facing wilderness management. The 1964 U.S. Wilderness Act states that wilderness should be "untrammeled"—that is, unmanipulated by humans—and that it should be "protected and managed so as to preserve its natural conditions" (Sec. 2c). The prevailing perception at the time of the Wilderness Act was that leaving an area alone *did* preserve its natural conditions. But the realities have changed. If "natural conditions" is a descriptive biological term for nature as it is (or would be) *uninfluenced* by humans, then leaving wilderness areas alone in today's world results in unnatural conditions, because broad-scale anthropogenic influences are now increasingly disturbing even the remotest wilderness areas. On the other hand, deliberate human-induced ecological manipulations to restore natural conditions may constitute "trammeling." In an era of increasing and potentially ongoing anthropogenic impact, there may be a dilemma between the goals of "wildness" and "naturalness" in our wilderness areas (Landres et al. 2001; Cole 1996, 2000, 2003. I follow Landres and Cole in equating "wildness" with "untrammeled").

The dilemma between wildness and naturalness has highlighted the need for a clarification of the values that underpin them, because both wildness and naturalness have been viewed as "twin goals" of wilderness management, to be pursued simultaneously (Aplet 1999, 2000). The goal of naturalness in wilderness is generally thought to be in the service of *ecological* value, defined broadly as "native life-form support" (Cordell et al. 2005, p. 206). But the goal of wildness seems more difficult to ground. What good is wildness? How do we uphold the value of leaving wilderness alone, given the negative ecological impacts it may be facing?

Paul Keeling.

A familiar approach is to characterize the value of the untrammeled as deeply symbolic of human restraint and humility (Cole 2005). Wilderness is "the only land where humans refrain from saying that they know best" (Cole 2005, p. 24). This may be true. But the characterization of this value of wilderness as a *symbolic* value does not really do justice to the supposed dilemma between wildness and naturalness. If one horn of the dilemma is characterized as "symbolic," then the dilemma has little force in the first place. "Symbolic" is too often synonymous with "not quite real" (in the way that, for example, a "symbolic gesture" is not entirely substantive or genuine). To label something as symbolic reflexively connotes "*merely* symbolic," which is precisely what we want to avoid in articulating the value of untrammeled, wild nature (Cole 2005). The ecological value afforded by manipulating wilderness will tend to trump a symbolic value expressing human restraint and humility. If this is true, then it is doubtful that wildness and naturalness can really be twin goals of wilderness management. Moreover, most restoration ecologists would claim to be exercising restraint and humility in their work, since their goals are set by objective, nonanthropocentric ecological guidelines, and not necessarily derived from "what humans think is best" (Light 2000). So if the goal of wildness is to be upheld, its value must be articulated in a way that is not self-defeating.

Figure 1—Olympic Wilderness managed by the National Park Service in Washington State. Photo courtesy of the NPS.

Wildness deserves a fair hearing. In what follows I advocate for the untrammeled as a substantial value worthy of serious consideration. I shall begin by explaining why I think the characterization of the value of wildness as a symbolic value does not go far enough.

The Problem with Wildness as a "Symbolic Value"

A symbol is necessarily a symbol *of* something. There is always a logical distinction between a symbol and that which it symbolizes. The Statue of Liberty is a symbol of freedom, but does not guarantee freedom, no matter how much its concrete and metal are looked after. America could become an autocratic, fascist state while the Statue of Liberty still stands as gloriously as ever. Conversely, although September 11, 2001, was described as an "attack on symbols of American values," our leaders assured us that American values would still prevail without those landmarks and monuments. In short, you could have the Statue of Liberty without freedom, and vice versa.

But you can't have *things that are wild* without *wildness,* or *wildness* without *things that are wild*; the two are logically inseparable. Therefore, if nature in an untrammeled, wild state is valuable, it is not *symbolically* valuable. It may be true that "wilderness designation is a symbol of human restraint and humility" (Cole 2005, p. 24), but there is a difference between the human act of wilderness *designation* and the *actual places* so designated. Wild, untrammeled nature in itself is not a symbol of human restraint and humility because it is not a *symbol* of anything. Of course, elements of nature, such as mountains, trees, and animals, have functioned as archetypal symbols in the myths and rituals of human cultures (Driver et al. 1996). But it might be more accurate to say that nature is symbolized because it is valuable, not the other way around. Wilderness *is* what is valuable, not the symbol of what is valuable. Talk of "the symbolic value of wilderness as untrammeled," might misleadingly imply that we could, in principle, symbolize the value of untrammeled, wild nature in some form other than actual untrammeled, wild places (in the way that, say, we could symbolize the value of freedom in something other than the Statue of Liberty). But this doesn't make much sense. Wilderness is not valuable because it is "symbolic of uncontrolled and self-willed places" (Cole 2005, p. 26)—rather wilderness is valuable because it *is* an uncontrolled and self-willed place.

How do we uphold the value of leaving wilderness alone, given the negative ecological impacts it may be facing?

Wildness as Process and Product

The tendency to categorize the value of untrammeled nature as a symbolic value is almost inevitable, because it is a "hard-to-define" value (Driver et al. 1996). We abstract the value of a wild place into something that the place "stands for" or "points to" (for example, "human restraint"), potentially obscuring the fact (paradoxically)

Figure 2—Panoramic view of Wrangell-Saint Elias Wilderness managed by the National Park Service in Alaska. Photo by Diane Taliaferro.

that the value necessarily attaches to the place and the wildness of its biotic and abiotic constituents. Human beings may variously describe an experience of wilderness as "God," the "divine," the "transcendental Self," "the Great Spirit," and so on, and these expressions may help in articulating the value of its wildness (Burton 2002; Driver et al. 1996). But many human beings would claim to have access to these spiritual experiences in other ways, whereas others would deny having these experiences in wilderness. Wilderness may not be a necessary, nor sufficient condition for such spiritual understanding. The value of wilderness has often been likened to a "cathedral" (Nelson 1998, pp. 168–69), but there is an important difference that the analogy ignores: If you eliminated every church from the face of the Earth, no worshipper would say (however offended they might be) that *God* had been eliminated. As I have argued, it is not so with wilderness. A devotee of the wild cannot watch the trammeling of wilderness and believe that an essential value of wilderness has not been substantially compromised. This is because the "Big Outside," like and unlike a church, is both *where* and *what* we worship. With a wilderness landscape, the distinction between the medium of worship and the object of worship merge and are indistinguishable.

When I say that wilderness is where we worship, I deliberately mean that there *is,* in a sense, something beyond the physical constituents of wilderness to which we bear witness—namely the process of its creation, that is, the wider context beyond human will, in which those properties and features come into being. In that sense wilderness experience could be of something "higher" or "beyond" wilderness itself. But the wider evolutionary, geological context is inherent in those features, *immanent* in them. Hence wilderness is also *what* we worship, because contact with the products of those higher forces is a constitutive part of that experience. We do not (and probably could not) venerate wildness as a symbol, abstracted from places and things that are wild. Both the process of wildness and its products are valued together.

I have argued against the characterization of wildness as a "symbolic value" on the grounds that it presupposes an untenable logical distinction between a wilderness area and its wildness.

The Value of Process

Help in articulating the value of wildness can be found in Robert Elliot's 1982 paper, "Faking Nature" (Elliot 1982). Elliot points out that it is not just an object's physical properties or attributes that determine its value, but the history and process of its creation. A thing's origin affects how we perceive it, and origin is an integral part of the evaluation process. For example, if I treasure a beautifully carved object that I later discover was the bone of a person specifically killed for the project, my valuation may legitimately turn to disgust. The authenticity of an object may also affect valuation. If I am told that the Vermeer painting I own and admire (believing it to be an original) is in fact an exact replica of the destroyed original, I may still value it, but less so. We value the *Mona Lisa* not just because of its beauty but because of the fact that Leonardo da Vinci painted it, the fact that he created many other great works, and so on. Elliot takes the analogy of how fakes, forgeries, and replicas are viewed in the realm of aesthetics and applies it to the modification of nature. Even if we could (*per impossible*) artificially produce a perfect replica of the Grand Canyon, we could not replicate the processes and

Figure 3—Cadiz Dunes Wilderness managed by the U.S. Bureau of Land Management in California. Photo courtesy of the BLM.

mechanisms that produced the Grand Canyon. An object's history and process of creation cannot be replicated, and this is a basis for saying that the replica counts for less than the real thing. This is not to say that all human artifacts are "bad" and all of wild nature is "good," but simply that the wildness of a place (i.e., the degree of its autonomous, nonhuman origin) is a source of its value, and is a reasonable and objective basis for not amending or altering it. And even if human-induced ecological manipulation might be more like art *restoration* rather than art fakery (Light 2000), it might still be the case that, in wilderness at least, we would settle for something less (or other) than the *Mona Lisa* as long as da Vinci is doing the painting.

Of course, constantly changing natural entities are not like finished works of art. But Elliot's analogy is intended to show that the ecological values of diversity, complexity, fecundity, and beauty *as such* in nature are not values that are totally "independent of what explains their presence" (Elliot 1982, p. 383). They are also valuable "in terms of the kinds of processes that brought them into being" (Elliot 1982, p. 384) such that "the manner of a landscape's genesis has a legitimate role in determining its value" (Elliot 1982, p. 383). Regardless of the empirical condition of wilderness at any given time, and even if there can be no truly pristine, "virginal" nature on Earth, we can still make the normative claim that nature's autonomy and independence from human intention, purpose, and design (i.e., wildness) is a value-adding property. Furthermore, the importance of the distinction between nature's autonomy and human intentionality does not depend on being able to draw a sharp line between them.

Elliot's argument has implications for ecological manipulation in wilderness areas. These implications go deeper than familiar worries about the potential ecological risks of ecological manipulation. If the value of untrammeled, wild nature is expressed in terms of its nonhuman causal genesis, then there is a way of explaining skepticism about the human engineering of nature that is not just risk aversion. We can firmly insist that there is unique value in the kinds of natural entities and arrangements that result from *those* (self-willed) processes, *even if* the resulting conditions are inferior according to the objective criteria of ecosystem health. This does not mean that we should never directly intervene in wilderness. It simply means that the trade-off between wildness and naturalness in our wilderness areas is a value question of substance and is not symbolic. Concern for wildness is not an irrational or obstinate fetish. It is perfectly rational, and not at all trading in symbols, to insist that *how* something is produced, and not just its physical properties, is a determinant of its value. This is an essential premise in articulating the value of wild, untrammeled nature that is often overlooked.

Conclusion

In this article I have argued against the characterization of wildness as a "symbolic value" on the grounds that it presupposes an untenable logical distinction between a wilderness area and its wildness. The value of untrammeled, wild nature is inseparably tied to its causal origin and cannot be instantiated any other way. Therefore, expressing the value of untrammeled, wild nature in terms of human virtues such as restraint and humility fails to capture what is unique about our valuation of wild nature, because these human values could be realized by other means. These could include trammeling wilderness for benevolent reasons, with great "humility," according to "nature's guidelines." We value the

wildness of our wilderness areas not only because restraint is a human virtue, but because that restraint results in unique conditions that cannot be gotten any other way. Untrammeled conditions are necessary for preserving both the process of wildness and its products, both the place and object of worship. We value wildness, not just because wildness symbolizes a humble human relationship to nature, but because the source of transcendence in nature is its wildness. Even in an era when anthropogenic global change may cause wilderness to become less natural, wilderness may still serve as inviolate areas where wildness has its highest expression. **IJW**

REFERENCES

Aplet, Greg H. 1999. On the nature of wildness: Exploring what wilderness really protects. *Denver University Law Review* 76: 347–67.

———. 2000. Indicators of wildness: Using attributes of the land to assess the context of wilderness. In *Wilderness Science in a Time of Change Conference*, volume 2, ed. McCool et al. (pp. 89–98). USDA Forest Service Proceedings RMRS-P-15-vol. 2. Ogden, UT: Rocky Mountain Research Station.

Burton, Lloyd. 2002. *Worship and Wilderness: Culture, Religion, and Law in Public Lands Management*. Madison, WI: University of Wisconsin Press.

Cole, David N. 1996. Ecological manipulation in wilderness—An emerging management dilemma. *International Journal of Wilderness* 2(1): 15–19.

———. 2000. Paradox of the primeval: Ecological restoration in wilderness. *Ecological Restoration* 18(2): 77–86.

———. 2003. Agency policy and the resolution of wilderness stewardship dilemmas. *The George Wright Forum* 20(3): 26–33.

———. 2005. Symbolic values: The overlooked values that make wilderness unique. *International Journal of Wilderness* 11(2): 23–27, 10.

Cordell, H. Ken, John C. Bergstrom, and J. M. Bowker. 2005. *The Multiple Values of Wilderness*. State College, PA: Venture Publishing.

Driver, B. L., et al. 1996. *Nature and the Human Spirit: Toward an Expanded Land Management Ethic*. State College, PA: Venture Publishing.

Elliot, R. 1982. Faking nature. *Inquiry* 25: 81–93. All citations in this paper are from the reprint of "Faking nature," in *Environmental Ethics: An Anthology*, ed. A. Light and H. Rolston III (381–89). Oxford, UK: Blackwell.

Landres, P. B., M. W. Brunson, and L. Merigliano. 2001. Naturalness and wildness: The dilemma and irony of ecological restoration in wilderness. *Wild Earth* 10(4): 77–82.

Light, A. 2000. Ecological restoration and the culture of nature: A pragmatic perspective. In *Restoring Nature: Perspectives from the Social Sciences and Humanities*, ed. P. Gobster and B. Hull (49–70). Washington, DC: Island Press.

Nelson, M. P. 1998. An amalgamation of wilderness preservation arguments. In *The Great New Wilderness Debate*, ed. J. B. Callicot and M. P. Nelson (154–98). Athens, GA, and London: University of Georgia Press.

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proceed to comb through our pubic hair, under our breasts, and behind our knees to remove unwanted blood-sucking beasties. Five days in the bush and we are comfortably simian. How easy and natural it feels. There is no hint of awkward embarrassment; the restrictions of society are meaningless under the circumstances. We play and splash, laugh, then dress, refreshed and smelling tolerable.

As I walk back to the van and back to my life in the Zulu village, I know that this experience changed my sense of self. I spent many weeks in the Rocky Mountain wilderness; this wilderness is vastly different. The difference is not the geography or the unique wildlife. An intangible primal essence emanates from this place that connects all lives. I grasp how relationships in nature are sacred unto themselves and how humans judge behavior and value resources from our own limited perspective, using our fears and needs as benchmarks of right and wrong. In five days I have become more alive but less worldly, more enlightened but with fewer answers, and more at peace but seeking truth. **IJW**

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CAROL BATRUS is the author of *When Elephants Fly: One Woman's Journey from Wall Street to Zululand*, which is a story about her involvement in a South Africa project to help Zulu people balance their economic development with protection of their culture and the environment. Carol is a volunteer with the WILD Foundation and lives in Boulder, Colorado; you can contact her at carol@wild.org.

Evaluation of Campsite Impact Monitoring

From 1987 to 2004 in the Bob Marshall Wilderness Complex

BY RANDY TANNER and GEORGE NICKAS

Abstract: Since 1987 the Bob Marshall Wilderness Complex has served as the prototype for the Limits of Acceptable Change (LAC) planning process. An important, but often overlooked, component of that process is monitoring. In this evaluation of nearly 20 years worth of campsite monitoring, it was concluded that change was impossible to assess within the current monitoring program, both at the opportunity class level and the individual campsite level. Monitoring is fundamental to wilderness stewardship and must itself be monitored to ensure management effectiveness.

Randy Tanner.

George Nickas.

The Bob Marshall Wilderness Complex

The Bob Marshall Wilderness Complex (BMWC) is composed of the Great Bear, Bob Marshall, and Scapegoat Wildernesses. Encompassing more than 1.5 million acres (607,028 ha) along the Continental Divide in northwestern Montana, this area offers outstanding opportunities for hiking, wildlife watching, hunting, fishing, and horseback riding, all within the most ecologically intact region in the contiguous United States. The BMWC has served as the prototype for the implementation of the Limits of Acceptable Change (LAC) planning process. The purpose of LAC is to develop a management program that provides opportunities for wilderness recreation, while maintaining natural conditions (Stankey et al. 1985; McCoy, Krumpe, and Allen 1995). Monitoring the indicators of change in or threats to natural conditions and desired opportunities is a single, but critical, component in this process (McCool and Cole 1998).

Despite the importance of monitoring, there has been little research explicitly targeted at an empirical understanding of monitoring performance (see figure 1). McCoy et al. (1995) provided an evaluation of the LAC process in general, but did not offer a detailed analysis of the monitoring component. In his 10-year review of monitoring in the BMWC, Warren (1998) found that managers of the BMWC felt that campsite monitoring had been accomplished as planned, but did not present an evaluation of the monitoring data.

The purpose of this article is to provide an empirical evaluation of nearly 20 years of monitoring campsite impacts in the BMWC, and to the extent possible, determine whether wilderness-protection standards incorporated into the LAC plan are being met.

PEER REVIEWED

Campsite Monitoring in the BMWC

First instituted in 1987, the monitoring component of the LAC process serves as the primary mechanism by which managers assess whether or not resource-based objectives for the BMWC are being met. The monitoring framework for the BMWC consists of a variety of indicators and associated standards that are monitored for the entire complex during a five-year "monitoring period." The first monitoring period for the complex was 1987 to 1992, the second 1993 to 1997, the third 1998 to 2002, and the fourth 2003 to 2007 (see figure 2).

The indicators serve as proxies for assessing biophysical and social conditions against established standards. Based largely on the work of Cole (1983a, 1983b, 1989), one such biophysical indicator is the Campsite Impact Index Rating (CIIR), which is a score from 20 to 60 assigned to a campsite based upon the completion of an "impact evaluation" that is a measure of:

- Vegetation Loss
- Mineral soil increase
- Tree damage
- Root exposure
- Development
- Cleanliness
- Social trails
- Camp area
- Barren core area

Every campsite is placed within a "condition class" based on its CIIR for a particular monitoring period. Campsites with a CIIR of zero are considered naturalized (but are still monitored after they are naturalized), 20 to 30 minimally impacted, 31 to 49 moderately impacted, and 50-plus heavily impacted. Once recorded, the CIIR is then evaluated in terms of the campsite impact standards, which are defined across four opportunity classes (OCs) (see table 1). These four opportunity classes range from pristine, little used areas (OC 1) to heavily used travel routes (OC 4) (United States Forest Service 2004).

Figure 1—Little research has targeted an empirical understanding of monitoring performance. Photo courtesy of the Aldo Leopold Wilderness Research Institute.

In order to evaluate campsite monitoring, CIIR data were obtained from the United States Forest Service for every campsite monitoring observation recorded from 1987 through 2004 (n = 4,508). All incomplete observations were discarded, bringing the total number of observations analyzed to n = 4,491 across 1,906 campsites. Our intentions were to analyze the data with the following two objectives in mind:

1. Identify changes in CIIRs across monitoring periods and opportunity classes.
2. Determine whether conditions meet the standards identified in the BMWC Recreation Management Direction.

Despite the seemingly large number of observations, preliminary

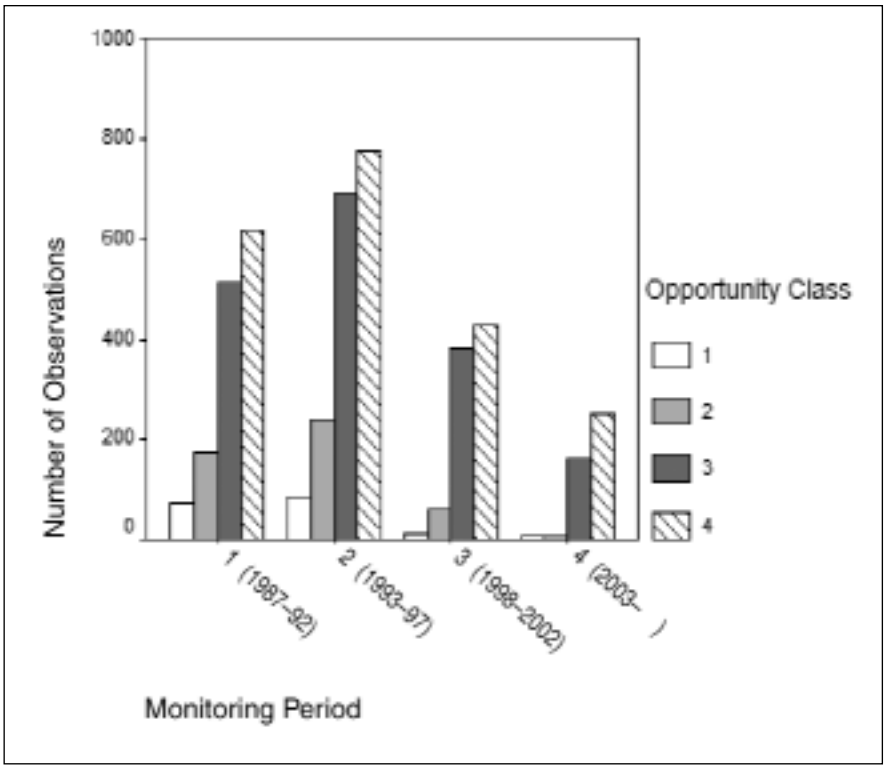

Figure 2—Number of monitoring observations by opportunity class across monitoring periods

analysis of the data quickly revealed that achieving these two objectives would not be possible (with one notable exception). Most importantly, inadequacies were grounded in a lack of comprehensiveness and/or representativeness of the data. Consequently, the emphasis of our evaluation shifted from a statistical analysis of trends in campsite impacts to identifying problematic features of the monitoring data that prevented meaningful analyses of those data. By determining the inadequacies of monitoring data, we can contribute to a larger discussion of how monitoring efforts might be more effectively designed and implemented.

Results and Discussion

The frequency of monitoring in the BMWC increased considerably for all opportunity classes from the first monitoring period to the second. And, although the fourth monitoring period is not yet complete (it will end in 2007), the findings suggest—at best—a linear decrease in the number of monitoring observations for all opportunity classes since the second monitoring period. Because previously impacted campsites are to be inventoried even after they are naturalized or restored (USFS 2004), the decrease in observations from the second to the third and fourth monitoring periods is a definitive indication of a decline in the proportion of total campsites that are monitored.

The lack of comprehensive monitoring in the third and fourth monitoring periods prohibited a meaningful analysis of campsite condition trends in the complex. For instance, whereas it appears that the CIIR declined sharply in OC 1 from monitoring period three to four (see figure 3), only 13 campsites were monitored during the third monitoring period (i.e., just over two observations per year) and only 7 had been monitored in the fourth monitoring period from 2003 to 2004. Because an explicit sampling framework has been neither documented nor articulated by the Forest Service, the representativeness of the small sample is not evident. The small sample size makes any statistical analyses of how campsite conditions are changing impossible.

It is clear that the median CIIR—displayed as horizontal bars within the boxes (see figure 3)—declined from the first monitoring period to the second, but the decline cannot be attributed to successful restoration efforts. Instead, the decrease is more accurately attributed to an increase in the number and proportion of

Table 1. Resource Standards for Campsite Impacts Across Opportunity Classes.

Opportunity Class	Standard
1	No moderately or highly impacted sites per 640-acre (259-ha.) area
2	No more than one moderately impacted site and zero highly impacted sites per 640-acre (259-ha.) area
3	No more than two moderately impacted sites and zero highly impacted sites per 640-acre (259-ha.) area
4	No more than three moderately impacted sites and one highly impacted site per 640-acre (259-ha.) area

minimally impacted sites observed in the second monitoring period—in monitoring period 1, 27% of the campsites observed were minimally impacted, whereas 48% of the campsites observed in monitoring period 2 were minimally impacted. Despite the increase in proportion of minimally impacted sites observed, only 12% of those minimally impacted sites observed in monitoring period 2 were sites that had been restored from moderately or highly impacted sites. Thus, in the absence of a campsite census, a decline in median CIIRs might *not* represent successful restoration efforts, but could rather represent a substantial increase in the number and/or proportion of minimally impacted sites established and observed.

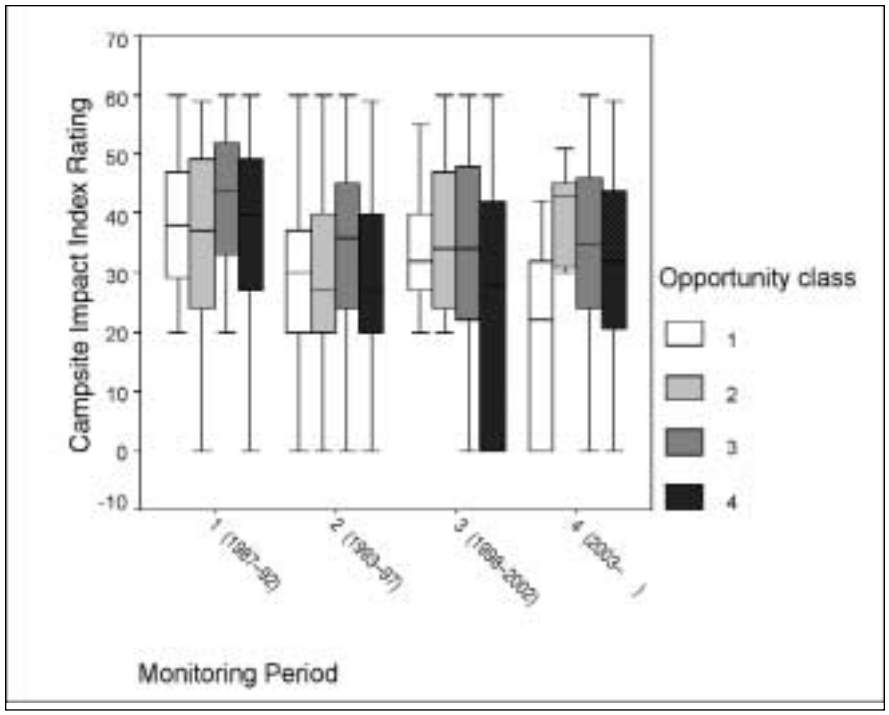

Figure 3—Boxplots of CIIRs by opportunity class across monitoring periods

The inability to assess change at the opportunity class level does not preclude an analysis of change at the individual campsite level. A representative set of campsites that have been monitored multiple times across monitoring periods could provide valuable insight into how campsite conditions are changing throughout the wilderness. Unfortunately, of the 1,344 campsites that were monitored during the first monitoring period, only 137 (10%) were monitored during the second and third monitoring periods. The lack of a meaningful set of campsites with multiple observations is most pronounced in OC 1 where only 1 campsite out of 71 monitored during the first monitoring period was subsequently monitored during the second and third periods.

For the reasons described above, a valid analysis of change in CIIRs was impossible to assess within the current monitoring program, both at the opportunity class level and the individual campsite level. Determination of how CIIRs are changing throughout the wilderness requires: (1) a systematized monitoring framework that explicitly identifies how campsites will be selected for monitoring (to address the issue of representativeness); and (2) more than one monitoring observation per campsite. Neither of these conditions could be sufficiently established for the BMWC campsite monitoring data collected thus far.

Our second objective for this study was to assess whether or not campsite impact standards were being met in the BMWC. Standards are legally binding, absolute limits that provide the parameters for management (see *Neighbors of Cuddy Mountain and Idaho Sporting Congress, Inc.* v. *United States Forest Service* 1998). Moreover, as Cole and McCool (1998, p. 64) discuss, "Standards are absolute limits—a 'line in the sand.' They are not warnings. Once standards are reached, management must implement whatever actions are necessary—even if it means curtailing use—to avoid violation of standards." As described in table 1, the campsite impact standards contain both a spatial and CIIR component. In most instances, we were unable to determine whether campsite impact standards were being met because the spatial data were not compiled in a way that could be readily analyzed.

Despite the problems associated with data compilation, a couple of conclusions related to the standards can be drawn. Noting, for instance, that no moderately or highly impacted sites are permitted in OC 1, and no highly impacted sites are permitted in opportunity class 2 or 3, the existence of any sites with these classifications constitutes a violation of standards. In OC 1, for instance, the percentage of moderately or highly impacted sites observed has ranged from 68.4% (50 sites) in monitoring period 1 to 61.6% (8 sites) in monitoring period 4. But as with the

Figure 4—Campsite impact standards have been violated, but it is not easy to determine the extent of such violations. Photo courtesy of the Aldo Leopold Wilderness Research Institute.

analysis of change in CIIRs, it is difficult to assess how representative these violations are given the small sample sizes and the lack of documentation related to the sampling framework. At a minimum, though, it can be said that standards have been violated, but it is not possible to determine the extent of such violations throughout the wilderness (see figure 4).

Recommendations for Wilderness Monitoring Frameworks

The findings and discussion above give rise to a number of recommendations that might be useful not only to the BMWC, but to any wilderness unit that currently employs or is considering the adoption of a monitoring framework. First, there must be the institutional commitment to: (1) carry out systematic and comprehensive monitoring, (2) to compile and analyze the data, and (3) to act on the results. The first element—systematic and comprehensive monitoring—is almost certainly a necessary precursor for the remaining two. If, indeed, a goal of monitoring is to observe how conditions throughout a wilderness are changing over time, a systematic methodology—including the articulation of a sampling framework—is necessary in order to establish the context or framework within which the conditions must be evaluated.

A systematized approach to monitoring is not sufficient in terms of the campsite impact standards the BMWC has adopted. Given the spatial component of the standards and within the context of the current monitoring protocol, a comprehensive census of campsites is needed in order to assess impacts against the standards. In other words, every campsite within a 640-acre (256-ha) area must be monitored in order to determine if standards are being met within that area. In the face of limited commitment (whether financial or human) and within the current monitoring framework, it seems unlikely that such a demand will be met. Thus, for the Forest Service to meet its stewardship commitment through the LAC process and BMWC management plan, it must commit greater resources to enable comprehensive monitoring. The alternative is to redesign the monitoring protocol to accommodate the lack of comprehensiveness, though this would admittedly not meet the original expectations for the LAC plan.

A second recommendation that we offer concerns the objectivity and reliability of monitoring. We suggest that monitoring teams should be created and chartered at a higher organizational level or at a quasi-independent level—for example, in the case of the U.S. Forest Service, at the Regional Office or perhaps the Research Station level. Many wildernesses, like the BMWC, are spread across numerous management units, each one with different priorities, levels of commitment to wilderness and monitoring, and human and financial resources. Moreover, to varying degrees monitoring serves as a performance evaluation for managers whose responsibility it is to preserve the area's wilderness character. As long as those collecting and analyzing the data answer to the person whose performance might be being judged, the perception, if not the reality, exists that the results may not be objective. It is the belief of the authors that monitoring teams that are chartered from a higher level in the organization would provide greater objectivity and interobserver reliability across a broader area, would enjoy more consistent financial and human-power support, and would engender more confidence in the objectivity of monitoring results.

Third, in order to ensure that the monitoring process is consistent across monitoring periods, there must be mechanisms in place to ensure that staff training is consistent as staff turnover occurs (Cole 1989). Regional monitoring teams could potentially go a long way to ensure interobserver reliability, but in the absence of these teams, efforts must still be undertaken to ensure that the staff of each wilderness unit measure indicators in the same manner.

Finally, the BMWC Recreation Management Direction (U.S. Forest Service 1987, p. 33) requires managers

to take a number of actions to mitigate conditions that are out of standard. According to the Management Direction, these actions range from "information and education" to "campsite closure" and "campsite permitting." When less extreme measures (e.g., information and education) are ineffective in improving conditions, more strict measures (e.g., campsite closure) must be undertaken. At this time, it is not readily apparent how successful the various approaches have been, but if the monitoring results are indeed representative of conditions within the complex, it would appear that the approaches employed have not been dramatically successful. Consequently, it would be valuable to monitor the success of mitigation strategies in addition to the actual campsite conditions.

Conclusion

The results of this analysis give rise to a poignant but salient question—what is the relevance of monitoring within a political and managerial context that precludes the resource commitments to carry out monitoring? Granted, this analysis concerns only one wilderness within the National Wilderness Preservation System, but the BMWC was established as the prototype for wilderness monitoring, and important lessons may be learned from the experiences within this particular wilderness.

This study set out to learn what 20 years of monitoring efforts could teach us about resource conditions in the BMWC. Unfortunately, we have concluded that very little can be learned. However, we feel that there is much that can be learned about the inadequacies of those data.

The monitoring process itself must be evaluated if it is to be employed as an effective tool for protecting an enduring resource of wilderness.

Fundamentally, we have endeavored to demonstrate that in addition to monitoring the conditions of wilderness resources, the monitoring process itself must be evaluated if it is to be employed as an effective tool for protecting an enduring resource of wilderness. **IJW**

References

Cole, David N. 1983a. *Campsite Conditions in the Bob Marshall Wilderness, Montana*. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experimental Station.

———. 1983b. *Monitoring the Condition of Wilderness Campsites*. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experimental Station.

———. 1989. *Wilderness Campsite Monitoring Methods: A Sourcebook*. Ogden, UT: U. S. Department of Agriculture, Forest Service.

Cole, David N., and Stephen F. McCool. 1998. The Limits of Acceptable Change process: Modifications and clarification. In *Proceedings—Limits of Acceptable Change and Related Planning Processes: Progress and Future Directions*, comp. Stephen F. McCool and David N. Cole. (p. 61-68) May 20–22, 1997, Missoula, MT. Gen. Tech. Rep. INT-GTR-371. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

McCool, Stephen F., and David N. Cole. 1998. Experiencing Limits of Acceptable Change: Some thoughts after a decade of implementation. In *Proceedings—Limits of Acceptable Change and Related Planning Processes: Progress and Future Directions*, comp. Stephen F. McCool and David N. Cole. (p. 72-78) May 20–22, 1997, Missoula, MT. Gen. Tech. Rep. INT-GTR-371. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

McCoy, K. Lynn, Edwin E. Krumpe, and Stewart Allen. 1995. Limits of Acceptable Change planning: Evaluating implementation by the U.S. Forest Service. *International Journal of Wilderness* 1(2): 18–22.

Neighbors of Cuddy Mountain and Idaho Sporting Congress, Inc. v. *United States Forest Service*. 1998. United States Court of Appeals for the Ninth Circuit. 137 F.3d 1372.

Stankey, G. H., D. N. Cole, R. C. Lucas, M. E. Petersen, and S. S. Frissell. 1985. *The Limits of Acceptable Change (LAC) System for Wilderness Planning*. Gen. Tech. Rep. INT-176. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

United StatesForest Service. 1987. Bob Marshall, Great Bear, Scapegoat Wildernesses: recreation management direction. Kalispell, MT: U.S. Department of Agriculture, Forest Service, Flathead, Lolo, Helena, and Lewis and Clark National Forests.

United States Forest Service. 2004. *Bob Marshall Wilderness Complex LAC Monitoring Guidebook*. Kalispell, MT: United States Department of Agriculture, Forest Service.

Warren, Greg A. 1998. Recreation management in the Bob Marshall, Great Bear, and Scapegoat Wildernesses: 1987–1997. In *Proceedings—Limits of Acceptable Change and Related Planning Processes: Progress and Future Directions*, comp. Stephen F. McCool and David N. Cole. (p. 21-24) May 20–22, 1997, Missoula, MT. Gen. Tech. Rep. INT-GTR-371. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

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PERSPECTIVES FROM THE
ALDO LEOPOLD RESEARCH INSTITUTE

The Importance of Archiving Baseline Wilderness Data

BY DAVID N. COLE

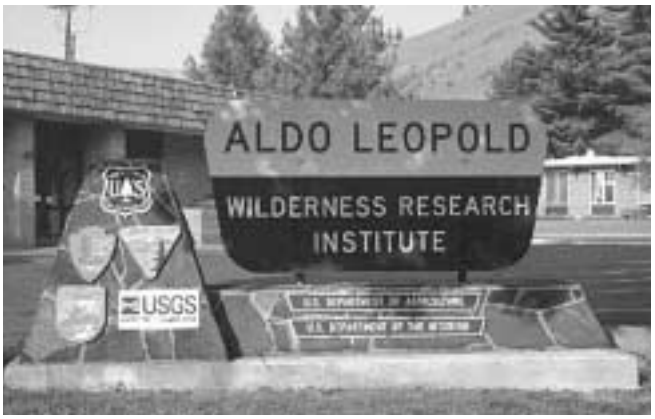
Baseline wilderness data are of considerable importance for several reasons. One of the primary values of wilderness is as a reference that contrasts with those lands where humans dominate the landscape. Leopold (1941) called wilderness "a base-datum of normality, a picture of how healthy land maintains itself." To realize this value, baseline data on wilderness conditions are needed, for comparison at some future time and for comparison to other lands. Baseline data also contribute knowledge needed to effectively steward wilderness. Baseline recreation data are particularly important to managing recreation in wilderness.

The most important types of recreation data are data on use and user characteristics, the results of visitor surveys/studies, and surveys of recreation impacts. Such data have been collected by land management agencies, by the research staff employed by land management agencies, and by academic institutions. Regardless of who collects such data, their value as a baseline can only be realized if they are properly archived, a process that takes careful planning and a significant investment of resources.

Unfortunately, baseline wilderness recreation data are sparse. Barely one-half of the wildernesses in the National Wilderness Preservation System (NWPS) have any baseline recreation data (Cole and Wright 2004). Data on use levels are so sketchy that there is no effort to regularly estimate or report recreation use of the NWPS.

Information about those data that have been collected for each unit in the NWPS (through 2000) is compiled in Cole and Wright (2003) and a searchable database is located on the Internet (http://leopold.wilderness.net/links.htm).

Moreover, the data that do exist are at risk. Much of the data is stored in paper files that are subject to being lost, misplaced, or forgotten. Increasingly data is being stored electronically, and some of these data are being captured on corporate databases. However, data collected by researchers (federal researchers, professors, and graduate students), even if it is stored electronically, can easily be lost. Data from classic visitor studies, stored on tape, have already been lost due to disintegration of that medium. In other cases, it has been impossible to find machines capable of reading tapes, and stored data have been thrown away to make space for new data.



Many studies that have been described as baseline studies cannot serve that purpose because resultant data have not been adequately archived. Adequate archiving requires a commitment to safe and accessible storage of data on a durable medium, using up-to-date technology, as well as careful documentation in the form of metadata. Since storage technology is always changing, data will regularly need to be rewritten, using the latest technology.

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Wilderness Rangers and Their Effects on Wilderness Character

BY PAUL MARKOWSKI

The Wilderness Act of 1964 (Public Law 88-577) was enacted by the U.S. Congress "to secure for the American people of present and future generations the benefits of an enduring resource of wilderness" (Section 2a). One of the main directives given to the four federal land management agencies by this wilderness law was to preserve the "wilderness character" of each designated area (Section 2a). Working as a wilderness ranger for the U.S. Forest Service during the past two seasons in the High Uintas Wilderness (Utah) allowed me to witness firsthand how the duties of a ranger affected the wilderness character of the area (see figure 1).

Untrammeled Conditions

One of the most important characteristics of wilderness is that it is uncontrolled by humans. The Wilderness Act explicitly states that a wilderness is "an area where the earth and its community of life are untrammeled by man." (Section 2c). One of the many duties of a wilderness ranger is trail maintenance because having trails within a wilderness is a type of control of the wilderness resource (see figure 2). Rangers also maintain trail conditions by installing wood bridges and water bars where they are necessary to protect the resource and removing obstructing vegetation to keep hikers on the trail. Even though all of these trail duties are necessary in order to prevent both damage and erosion to the trails, they are, to some extent, "trammeling" the wilderness.

Figure 1—Spider Lake in the High Uintas Wilderness. Photo courtesy of Paul Markowski.

Paul Markowski on Kings Peak.

Campsite restoration is another ranger duty that can trammel the wild area. The reason that restoration needs to be done is usually because of thoughtless and/or careless campers who leave garbage at their site, build and leave rock fire rings, and leave campsites denuded of ground vegetation that is unsightly for those who pass the site in the future. Some might argue that these areas should not be restored to natural conditions, but rather be allowed to naturally regenerate back to their original pristine condition. Natural recovery may be unrealistic without camping prohibitions on those sites and enforcement because people tend to camp in previously disturbed areas. Therefore, rangers often need to physically bring these campsites back to their original condition by picking up the trash, breaking up old fire rings, and attempting to regenerate the soil, vegetation, and site conditions.

Unconfined Recreation

Wilderness, as stated by the 1964 legislation, must also offer "a primitive and unconfined type of recreation" to

Figure 2—Trail maintenance work in the High Uintas Wilderness. Photo by John Moore.

visitors (Section 2c). Wilderness was designated, in part, to allow the American public to experience and connect with their pioneer heritage. Today, many people in America live and work in an urbanized "concrete jungle," thus, having wild areas for escape is becoming a necessity. So when a visitor goes to the wilderness, one of the greatest characteristics it offers is an unconfined area for escape from everyday routines. One problem with this idea is that when many humans engage in unconfined recreation in the same area, management and enforcement problems are sure to arise. When the 1964 Wilderness Act was written, its writers probably never imagined that so many Americans would visit these wildlands and cause the trammeled conditions the legislation sought to prevent. The sheer numbers of people that visit wilderness areas is increasing annually.

In order to save the wild nature of these lands, some wilderness areas within the National Wilderness Preservation System have had to adopt restrictions on visitor activities and behavior. Some examples of use restrictions are group limits, camping area location restrictions, stock use restrictions, and campfire use restrictions. When a wilderness area has use or user restrictions, it is up to the wilderness ranger to educate and inform visitors or, if necessary, to enforce those restrictions. Sometimes conducting law enforcement activities can lead to conflict between visitors and rangers. Visitors may believe that the use restrictions are not in accordance with the Act's "unconfined type of recreation" clause. However, restrictions are needed and enforced by the rangers to maintain natural conditions in the wilderness resource.

In order to help educate visitors, a wilderness ranger must be well versed in the Leave No Trace (LNT) principles. Rangers not only practice these LNT principles themselves, but also teach them to everyone they meet during their tours within the wilderness area. LNT principles help to educate wilderness users on how to minimize their impacts to the wilderness resource. These principles are very important in protecting both the land and its flora and fauna, and they also teach visitors to "confine" their own activities to a certain extent. LNT teaches people to camp and walk on durable surfaces, to use a camp stove instead of a campfire to cook food (see figure 3), to pack out all that you pack in, and to bury all human waste. These LNT principles are designed to protect the natural conditions of an area and teach visitors to voluntarily confine their activities and behaviors—a balancing between protecting and allowing unconfined recreation that is not understood by all visitors.

Working as a wilderness ranger for the U. S. Forest Service … allowed me to witness firsthand how the duties of a ranger affected the wilderness character of the area.

Solitude

One of the most attractive characteristics of a wilderness is that it offers solitude to the visitor. People go to wilderness to seek solitude for a number of reasons. Some want to get away from the big city life in order to experience silence, whereas others seek solitude for spiritual renewal and religious meditation. No matter what the reason is for a visitor to seek out this solitude, wilderness can provide it. One of the duties of any wilderness ranger is to seek out public visitors within the wilderness. Rangers are trained to teach users LNT, wilderness safety, and to inform them of any use restrictions that may

be in effect. Imagine a visitor who has specifically entered a wilderness area with only one goal in mind—to find solitude. When a ranger encounters that visitor at his or her campsite, this solitude experience may be violated and, in the mind of the visitor, his or her solitude experience may be lost. This, of course, can lead to conflicts between visitors and rangers. Some people suggest that rangers should be banned from wilderness for this reason. However, when the pros and cons of having wilderness rangers in wilderness are considered, I am confident that the pros far outweigh the cons, because the main directive given to the federal land management agencies by the Wilderness Act is the protection of the wilderness resource.

Rangers are also trained in search-and-rescue techniques. Some people argue that the roar of a rescue helicopter impacts some visitors' sense of solitude within a wild area, even when it is done to save another visitor's life in the wilderness. However, what some visitors do not understand is that when a ranger learns that there is a possible search-and-rescue mission, the "minimum tool" for search and rescue is always used. For example, if a visitor breaks his or her ankle and the ranger determines that no life-threatening situation exists, then a horse or mule will probably be brought in to take the injured user back to the trailhead rather than compromise the serenity and solitude of the wilderness with an air rescue. The minimum tool for transporting the injured visitor here is the stock animal.

Figure 3—Paul Markowski demonstrating LNT cooking equipment and techniques. Photo by John Moore.

The wilderness character of an area is of the utmost importance and needs to be preserved for future generations, but this must be weighed against reasonable management activities (via the minimum tool assessment) and how those management activities might impact on a visitor's wilderness experience—opportunities for primitive and unconfined recreation and solitude. After all, a ranger's job is in protecting the wilderness character. **IJW**

REFERENCES

The Wilderness Act. 1964. Public Law 88-577(16 U.S. C. 1131-1136).

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with 18 photographs, 57 figures, 82 tables, 25 highlighted sidebars of facts, and more than 170 brief case study statements. This authoritative compendium of information is the most complete guide available to lead park planners and managers from concepts through best management practices. The experts who have produced this important compilation, under the guidance of the World Conservation Union (IUCN), are providing valuable information to those currently managing protected areas and those who support this worldwide movement.

"Protected areas are a critical land-use type for the future of life on Earth. At the beginning of the 21st century, in one of the greatest land- and sea-use transformations in human history, nations of Earth had reserved over 12 percent of the Earth's terrestrial surface and 0.5 percent of its marine systems as protected areas" (p. 3).

This book is what was learned in building that protected area legacy and what we need to know to maintain and expand these as part of the life-support systems on Earth.

Reviewed by CHAD P. DAWSON, managing editor of *IJW*; e-mail: cpdawson @esf.edu.

Caddo Lake—a sprawling, 27,000 acre maze of bayous and sloughs—is located in northeast Texas on the Louisiana border. This natural jewel is rich with wilderness quality, and is home to an incredibly beautiful bald cypress forest, an expansive tangle of aquatic plants, 71 species of fish, and abundant wildlife.

Boulder, Colorado photographer Stephen Gaudin was born near Caddo Lake, where he explores and photographs from a canoe. His portfolio of Caddo Lake images are available for viewing and/or purchase—http://www.stephengaudin.com

Third International Gathering of the Wilderness Guides Council

BY JOHN HENDEE and MARILYN HENDEE

The Wilderness Guides Council, the international organization of wilderness vision quest and rites of passage guides, met October 9 through 14, 2006, at Gaunts House and Estate in Dorset County, England, 100 miles southeast of London (see figure 1). The conference theme was Rites of Passage in the Wilderness: Integrating Nature and Humanity.

This third international gathering of the council was hosted by the wilderness guides of England, and attended by 80 guides from 12 countries. Attendees participated in workshops, ceremony, council discussions, and exhibited their guided programs from throughout the world. A field trip to Avebury in Wiltshire to view burial and sacred sites up to 8,000 years old reminded participants of the ancient roots of ceremony in nature.

Figure 1—The 3rd international gathering of the Wilderness Guides Council was held at Gaunts House, built in 1750 on a site occupied since at least the mid 1300s, in Dorset County about 100 miles SE of London, England.

Figure 2—The international gathering was attended by 80 wilderness vision quest and rites of passage guides from 12 countries, and featured the theme Rites of Passage in the Wilderness: Integrating Nature and Humanity.

Participants came from the United States, England, Germany, Austria, Ireland, South Africa, Norway, Sweden, Denmark, Switzerland, Ukraine, and Scotland (see figure 2). The United States had the largest delegation of guides with 16. EDUCO of South Africa, who run wilderness rite of passage programs for "at risk" youth, had the most delegates from any one program.

Activities, discussion, and workshops were diverse, including topics such as Elderhood, and the Second Half of Life, Learning to Die in Order to Live—where nature instructs the participant—Listening to the Earth, and The Wisdom of Plants and Animals in the Mirror of Nature. Informal discussions documented a need in many countries

for more protected areas where wilderness programs for reflection and personal growth can be conducted.

The next international gathering of the Wilderness Guides Council will be hosted by the U.S. Wilderness Guides Council in April 2009. For more information, contact www.wildernessguidescouncil.org. **IJW**

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Data should be stored in multiple places so it cannot be catastrophically lost. The availability of data should be advertised and made available (such as through the Internet), so it can be used in the future. Metadata is information about the content, quality, condition, and other characteristics of data. It describes the who, what, why, when, and where of data collection. The most helpful metadata carefully explain exactly how someone could replicate data collection and analysis in the future.

The Leopold Institute has recently been investing in careful archiving of some of the datasets that its scientists have compiled over the past 40 years. These include some of the earliest data on wilderness visitors and recreation impacts. We also rescued data on river recreation visitors, obtained in the 1970s by the Forest Service's River Recreation Research Unit (Lime et al. 1981), from tape and the trash bin. Data have been migrated from the tapes on which they were stored and are being archived. Data on campsite impact, repeated periodically over time, from a sample of wildernesses throughout the NWPS, have been archived. Although this effort has only begun, some datasets are already available (http://leopold.wilderness.net/research/fprojects/F010.htm). **IJW**

REFERENCES

Cole, D. N., and V. Wright. 2003. *Wilderness Visitors and Recreation Impacts: Baseline Data Available for Twentieth Century Conditions*. General Technical Report RMRS-GTR-117. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station.

———. 2004. Information about wilderness visitors and recreation impacts: Is it adequate? *International Journal of Wilderness* 10(1): 27–31.

Leopold, A. 1941. Wilderness as a land laboratory. *Living Wilderness* 6: 3.

Lime, D. W., R. C. Knopf, and G. L. Peterson. 1981. The national river recreation study: A growing new data base with exciting potential. In *Some Recent Products of River Recreation Research*. General Technical Report NC-63. St. Paul, MN: USDA Forest Service, North Central Forest Experiment Station.

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Zambezi Wilderness

Meeting the Challenges

BY SALLY WYNN

Introduction

This article describes the success of a first training course in wilderness concepts and practice held in 2006 in the Zambezi region of south-central Africa (see figure 1), where wilderness values are little acknowledged or understood. Participants were drawn from Parks and Wildlife Authorities responsible for managing large and valuable wildernesses under state protection but with inadequate capacity and funding. The results of this first course are encouraging for wilderness conservation in the region, but since the area is vast, a lot more work needs to be done, in both protected and settled lands where African communities face many challenges.

Background

Africa's fourth largest river basin, the Zambezi, covers a vast 1.2 million sq. km (3.1 million sq. miles) of south-central Africa. Famous for its "big game," including elephants, hippos, crocodiles, and the superb fighting tigerfish, this river system provides water and biological resources to millions of people. It is also one of the region's major tourism destinations, attracting visitors from all over the world for its wild nature, scenic beauty, tropical climate, and relative accessibility and safety. It is most famous for the Victoria Falls, a World Heritage Site shared between Zimbabwe and Zambia—often marketed as one of the "Seven Natural Wonders of the World"—and two hydroelectric impoundments, Lake Kariba (shared by Zambia and Zimbabwe) and Lake Cabora Bassa (in Mozambique), which provide major recreational opportunities.

A total of 36% of the basin's area is classified formally as "state protected," including another World Heritage Site, the Mana Pools/Sapi/Chewore complex in Zimbabwe, and several large national parks, which are rich in biological diversity, with forests, wetlands, and other complex ecosystems supporting abundant wildlife. These protected areas contain magnificent wilderness landscapes of exceptional value, which are not specifically safeguarded or managed as "wilderness" and are only loosely classified as "wilderness zones" within existing protected area legislation.

Sally Wynn. Photo by Dick Pitman.

Outside these state-run protected areas, the Zambezi valley's wild and rugged terrain, coupled with its harsh and arid climate, is a challenge to human livelihoods and, where settlement does occur, people are forced to exist on subsistence agriculture. An expanding population, together with limited land availability and poor soils, makes this form of land use unsustainable. Alternative sustainable income-generating options such as wildlife production and ecotourism are urgently being explored. But so far, little of the revenue generated from these initiatives trickles down to communities, and Zambezi valley lands outside protected areas have attracted scant interest from investors.

The Zambezi's valuable wilderness resource faces many threats:

- Unwillingness by governments to devolve management of natural resources to local communities, or involve them in meaningful comanagement agreements for protected areas and wilderness.
- Lack of government funding and inadequate capacity

Figure 1—Location map of Zambezi region in southern Africa. Courtesy of The Zambezi Society.

for effective protected area and wilderness area management.

- Poverty, which forces people into poaching important Zambezi species, such as the black rhino and elephant, or unsustainable harvesting of forests and fish.
- Development needs often prioritize high-impact agriculture, mining, energy generation, and water extraction over the low-impact retention of wildlands for tourism, hunting, or conservation.
- Lack of cohesive or holistic regional land-use planning in the eight Zambezi region countries. Uninformed and inappropriate planning in the upper catchment area can have drastic environmental consequences on people and wildlife far downstream.
- Inappropriate development of infrastructure and facilities in parks that impact negatively on biodiversity and wilderness character.
- Lack of information: Local communities are seldom properly informed or consulted, and although conservation biologists and ecologists may draw the attention of their peers to the global significance of the Zambezi basin's wilderness and biodiversity values, communities, local authorities, planners, and even policy makers in the area lack access to this type of information.
- Increasing alien invasions of plants, animals, and diseases to indigenous wildlife that are not being controlled.

Wilderness Organizations in the Zambezi Region

The Zambezi Society (www.zamsoc.org) is a nonprofit conservation organization that focuses on the Zambezi River and its basin. Established in 1982, it works primarily in Zimbabwe, Zambia, and Mozambique, providing practical, local solutions for conservation challenges in both the protected and settled areas of the Zambezi region. One of its major objectives is to conserve the wilderness areas of the Zambezi and promote recognition of their values. Using the findings of research work it carried out into perceptions about the Zambezi's wilderness values from visitors, local communities, and conservationists, The Zambezi Society has developed a Wilderness Conservation Program aimed at increasing awareness, informing management and stewardship, and influencing behavior in wild areas within the Zambezi River region. The program incorporates training, advocacy, research, planning, incentives, and monitoring activities for the conservation, protection, and management of wildernesses in the region's protected areas and settled lands.

The Wilderness Action Group (www.wilderness.org.za) is a nonprofit South African–based organization that promotes the concept of wilderness in an African context. It provides advice on conserving, protecting, and managing wilderness areas; makes submissions to promote the development of appropriate wilderness legislation and policy; offers professional training courses and awareness seminars to bridge knowledge and information gaps in wilderness conservation, protection, and management; monitors existing wilderness areas; and promotes the designation of new wilderness areas.

Zambezi Wilderness Training

The first in a series of training courses in Wilderness Concepts and Practice aimed at increasing awareness about wilderness and its values in the Zambezi region took place in September 2006. It was particularly successful, and as a result, there are signs that a positive new perspective on wilderness conservation in park management for this wilderness-rich region has taken root.

The training was run jointly by the African-based nonprofit organizations The Zambezi Society and the Wilderness Action Group, and was held at the Rifa Educational Camp near the border town of Chirundu on the Zambezi River between

There are signs that a positive new perspective on wilderness conservation in park management for this wilderness-rich region has taken root.

Zimbabwe and Zambia (see figure 2). Funding was provided through The WILD Foundation in the United States.

Twenty senior policy makers, managers, and field officers from the Wildlife Management Authorities of Zimbabwe and Zambia attended the training. Many of the Zambezi region's most important wildernesses fall within historically designated state protected areas administered by these authorities, and the participants were carefully chosen for their potentially key roles in protecting these wild areas in the face of huge challenges—not the least of which is woefully inadequate state funding (see figure 3).

However, because the colonial designation of national parks and protected areas in the Zambezi basin region excluded local communities from settlement in these areas or any involvement in their management, these authorities have traditionally focused on wildlife protection, antipoaching, and law enforcement.

The concept of wilderness, its values to people and tourism, and the need for its conservation is little acknowledged and even less understood here. Its Western origins are treated with suspicion; it is often misunderstood as being exclusionist, and its benefits regarded, erroneously, as irrelevant to developing societies.

The Zambezi Society, which lobbies for wilderness conservation and promotes recognition of wilderness values, wants to change all this. Acknowledging that education is key to influencing attitudes and management, it joined forces with training experts from the Wilderness Action Group to develop and run this first 10-day course.

As expected, the 20 park professionals who participated in the course had little previous knowledge or experience of the concept of wilderness or its potential application in their area of interest (despite the existence of wilderness zones in some of their park management plans).

Figure 2—The Zambezi River between Zambia and Zimbabwe. Photo by Dick Pitman.

The course gave them a greater understanding of the values and benefits of wilderness for biodiversity conservation and people in the Zambezi region and, through relevant case studies and practical work, provided ideas and inspiration for application of this understanding in park planning.

Important Ideas Shared

The training course also provided an opportunity for The Zambezi Society and the Wilderness Action Group to share ideas and discuss important wider issues about the management and planning of protected and wilderness areas in the Zambezi region with this influential group.

There is a growing realization (acknowledged in the resolutions of the Fifth World Parks Congress held in Durban, South Africa, in September 2003) that the policies and practice of "preservation" and "conservation" of protected areas and wilderness areas for biodiversity conservation and tourism objectives to the exclusion of people no longer work nor are they relevant. In this part of Africa, where some of the world's poorest people live in and

Figure 3—Wilderness training course participants. Photo by Drummond Densham.

Figure 4—Wilderness training course group at work. Photo by Sally Wynn.

around some of the world's wildest lands, rifts were created between the haves and have-nots that cannot continue if the poverty in rural communities is to be meaningfully addressed.

New models that involve stakeholders in the management of protected areas and natural resources and see the flow of benefits to people, particularly those living in poverty on the boundaries of protected areas, are needed for the continued existence of protected areas, wilderness, and natural resources.

Furthermore, the resources of the Zambezi valley are shared between several countries. Planning and management of protected areas in this region cannot therefore be done in isolation but must be part of a regional initiative whereby resources can be sustainably utilized by people, and development is planned to protect national parks and the wilderness character of the Zambezi region while bringing much-needed growth to address the poverty that exists in the surrounding rural communities.

This will require sound leadership that is willing to grapple with the complexities of protected area planning and management on a regional scale that goes beyond park boundaries. It will require building relationships and trust with communities that have been marginalized, and, through an environment of learning, developing partnerships and mechanisms for shared management. This holistic approach to protected area and wilderness area management and planning was shared with the participants of this first Zambezi wilderness course and was well received by them.

Encouraging Response

The responses to the course were universally positive. Most found it to be extremely valuable, practical, and applicable to their work; many were inspired to incorporate the concepts into their future management planning and to encourage their superiors to embrace wilderness management principles and training in all aspects of Parks Authority work. A selection of their comments follows:

> The whole course was overwhelming and very educative and I look forward to more courses of this nature. The idea is very encouraging and valuable.

> The wilderness management course has enhanced knowledge of the vital concepts of the subject. This information is going to be used to redo our park plan.

> The course is essential for protected area managers and policy makers in the region. Wilderness management should be a component of ALL protected areas and regional planning in modern landscape management.

> The course has a lot for protected area managers more specially in southern Africa. These kinds of short courses in wilderness management must be encouraged at all costs. As this is beneficial for both our biodiversity and communities.

> This short course in wilderness management has been an eye-opener to protected area managers in southern Africa, particularly in Zimbabwe and Zambia. I recommend that more managers should join the Wilderness Action Group to have these concepts strengthened in our respective countries.

> I liked the course. It is to a greater extent helpful to protected area managers in general and protected area planners and researchers also. It made me understand the challenges facing the entire Zambezi valley and how we can develop our own definitions and management plans for different land uses to satisfy different stakeholders as well as the environment itself.

Positive Outcomes

There have been some particularly interesting initial outcomes of this training: As part of their course group work, Zimbabwean and Zambian participants responsible for protected areas on both sides of the Zambezi River, including at the world famous Victoria Falls, worked together to develop the start of an integrated

transboundary zoning plan (see figure 4). During the course, concern was expressed about the impact on wilderness values of a vast and very controversial hotel and golf course development proposed on the Zambian side of the Zambezi River at Victoria Falls. The authorities in Zambia have subsequently had a change of heart and, although the development has not been stopped outright, it has now been severely restricted in scope. Of course, such a decision cannot be directly attributed to the influence of the wilderness training on Zambian park management authorities; however, it is possible that lessons learned may have assisted in adding fuel to the fire of the debate.

More recently, a group of senior staff from the Zimbabwe Parks and Wildlife Management Authority who took part in the wilderness training course have lobbied to incorporate wilderness concepts into the syllabus for a national diploma in Wildlife Management currently being developed by the authority. Their suggestions have been accepted.

Also, The Zambezi Society has been asked to assist the Zimbabwe Parks and Wildlife Management Authority to develop a Management Plan for the Matusadona National Park and Black Rhino Intensive Protection Zone. Apart from being a sanctuary for one of Africa's highly endangered species, this park, which straddles the Zambezi escarpment-type mountains south of Lake Kariba, contains some extremely important wilderness areas. The society intends to make the most of this opportunity for wilderness conservation.

Wilderness Training for Communities

In the three years that it took to achieve the substantial funding needed to run this first Zambezi wilderness training course, The Zambezi Society prepared the ground by identifying key individuals in the public, private, and community sectors with direct influence over the future of the Zambezi's wild areas. As an interim step, nine people were sent for wilderness training to the Wilderness Action Group in South Africa. Six of these were representatives from important Zambezi valley communities in northern Zimbabwe, among them a traditional chief and a headman.

In 2005, with sponsorship from The WILD Foundation, The Zambezi Society attended the 8th World Wilderness Congress in Alaska with a delegation of three Zambezi community representatives from the area around Lake Cabora Bassa in Mozambique. This group benefited from the pre-Congress certificated international wilderness training given by the Wilderness Action Group and the Centre for Environment, Agriculture and Development of the University of KwaZulu-Natal. It participated in the Native Lands and Wilderness Council, outlining the challenges facing communities and wild areas and shared experiences with indigenous peoples from other lands. At this Congress, The Zambezi Society drew attention to wilderness in an African context by proposing a resolution to form a wilderness and indigenous peoples working group to review the international definitions of wilderness with respect to indigenous peoples. After some debate, the resolution was accepted.

Future Plans

The Zambezi Society and the Wilderness Action Group are collaborating on another Zimbabwe/Zambia wilderness training course for protected area managers in 2007 and hope to extend this training to Mozambique and to Zambezi valley communities thereafter. They will also be working with Zambezi government authorities to develop policy statements for wilderness conservation, protection, and management in the region. In the meantime, The Zambezi Society hopes to produce a series of wilderness awareness education materials and to collaborate with the relevant management authorities in developing a Zambezi Wilderness Code of Conduct for visitors, developers, and operators in an attempt to influence tourism attitudes and behavior in sensitive wild areas.

> Zimbabwean and Zambian participants responsible for protected areas on both sides of the Zambezi River … worked together to develop the start of an integrated transboundary zoning plan.

Challenges

Significantly, introducing wilderness awareness to park management authorities and communities in the Zambezi region through training and exposure at the World Wilderness Congresses has served to highlight some of the challenges faced by wilderness conservationists, protected area managers, and communities in this African region:

- There is a huge knowledge gap about wilderness and the benefits

of its conservation, and an urgent need for further education in wilderness concepts and practice at many different levels throughout the region.

- The lack of any existing wilderness policy in an area where poverty levels are high and development is a priority renders these extremely valuable wild areas vulnerable. Consideration needs to be given to developing wilderness conservation policies that can be incorporated into existing legislation for protected area management, transfrontier conservation areas, tourism, and community welfare.
- Wilderness conservation can benefit from the Zambezi's extremely important regional tourism industry if it is carefully marketed and its effects carefully monitored. However, much preparatory work needs to be done in creating awareness and sensitivity, undertaking careful planning and zonation and developing guidelines and Codes of Conduct for developers and tour operators.
- In places like Africa, where many people live in wildlands, deriving benefits from their wilderness and its values could help communities make their livelihoods more sustainable and encourage them to look after their wild resources in the long term. However, the concept of people inhabiting wilderness does not currently sit easily with international wilderness conservation policies.
- The vast scale of wilderness in places like the Zambezi basin and the economic constraints placed on managers of African wild areas mean that existing wilderness management principles (adopted largely for First World application) will need to be adjusted in order to be relevant.

Given the size of Africa, protecting its valuable wilderness areas will require boundless patience, considerable resources, and a great deal of goodwill. It will also require political commitment and the cooperation of governments. The Zambezi Society and the Wilderness Action Group are committed to addressing these challenges in the coming years and are seeking the funding and implementing partners to assist them in doing so.

Acknowledgments

The contributions of Bill Bainbridge, Drummond Densham, Dick Pitman, and Duncan Purchase to this article are acknowledged with gratitude.

SALLY WYNN is wilderness programme coordinator for The Zambezi Society (www.zamsoc.org).

Dogsledding in the Denali Wilderness; an area managed by the National Park Service (Alaska). Photo by B. Waddington.

Announcements

World's Largest Conservation Area in the Works

Five southern African countries have signed a memorandum of understanding to create an international park nearly the size of Italy. The proposed Kavango-Zambezi transfrontier conservation area will cover 287,132 sq. km (110,862 sq. miles) within the countries of Angola, Botswana, Namibia, Zambia, and Zimbabwe. The park will link 36 national parks, game reserves, community conservancies, and game management areas within the Okavango and Zambezi River basins, including Victoria Falls and the Okavango Delta. The park, which is likely to be formally established in 2010, will create transborder ecological linkages that will facilitate wildlife movement over vast areas. It is estimated the park will have 250,000 elephants alone, the world's largest population. First, however, fences will have to come down, land mines removed, and development along rivers and roads curtailed. Werner Myburgh, Peace Parks Foundation project manager, says that "from a conservation perspective, this is the most significant effort in Africa in the last 100 years. It is very challenging, but very exciting. We already have a major potential donor in the form of the German Development Bank." Source: *The Cape Times*, Cape Town, South Africa, December 12, 2006.

U.S. Congress Designates More Than 1 Million Acres of Wilderness

By the end of its two-year-long term in December 2006, the 109th Congress passed six wilderness bills, protecting more than 1 million acres (405,000 ha) of new wilderness:

- Cedar Mountain Wilderness, Utah, 100,000 acres (40,500 ha)
- Ojito Wilderness, New Mexico, 11,000 acres (4,450 ha)
- El Toro Wilderness, the first wilderness in Puerto Rico, 10,000 acres (4,050 ha)
- New England Wilderness Act of 2006, New Hampshire and Vermont, more than 76,500 acres (31,000 ha) in six wildernesses
- White Pine County Conservation, Recreation, and Development Act of 2006, Nevada, more than 558,000 acres (226,000 ha) in 12 wildernesses
- Northern California Coastal Wild Heritage Wilderness Act, California, more than 275,000 acres (111,000 ha) in 18 wildernesses

Of special note is the protection, under the California Act, of the longest stretch of undeveloped coastline in the lower 48 states, the King Range's stunning Lost Coast. The Act also protects 21 miles (34 km) of new Wild and Scenic River.

(Sources: overview: www.leaveitwild.org; Cedar Mountain: www.wilderness.org/WhereWeWork/Utah/WR156CedarMountainSigned.cfm; Ojito: www.ojito.org; El Toro: www.fs.fed.us/news/2006/releases/01/cnf-el-toro-fact-sheet.pdf; New England: www.govtrack.us/congress/billtext.xpd?bill=s109-4001; White Pine: www.wilderness.org/Library/Documents/upload/WP_bill_passed_06_1209a2.pdf; California:www.wilderness.org/WhereWeWork/California/NCaliforniaWild.cfm.)

U.S. National Park Service Releases Final Revised Management Policies

After months of controversy and more than 45,000 public comments reacting to the draft released in 2005, the National Park Service has published its final 2006 *Management Policies*, the first revision since 2001. Although the policies address all facets of park management, chapter 6 deals specifically with wilderness preservation and management. As stated in the introduction, "Adherence to policy is mandatory unless specifically waived or modified by the Secretary [of the Interior], the Assistant Secretary, or the [Park Service] Director." Much to the relief of the general conservation community, the wilderness policies are very similar to those of the 2001 edition. Among the 10 Underlying Principles overarching all management policies, two stand out: "Prevent impairment of park resources and values" and "Ensure that conservation will be predominant when there is a conflict

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

between the protection of resources and their use." Source: www.nps.gov/policy/MP2006.pdf.

U.S. Forest Service Summarizes ANILCA Provisions in Alaska

The U.S. Forest Service has released a 14-page document presenting its interpretation of allowable public uses of motor vehicles, aircraft, motorboats, snowmobiles, and motorized equipment within national forest wilderness and wilderness study areas in Alaska. Most Alaskan wildernesses are governed by both the Wilderness Act and the Alaska National Interest Lands Conservation Act (ANILCA) of 1980, which exempts that state's wildernesses from many of the prohibitions of the Wilderness Act and provides unique management direction. Entitled "What Can I Do In Wilderness? ANILCA and Wilderness on National Forests in Alaska," the paper answers frequently asked questions regarding recreational and subsistence activities, the taking of fish and wildlife, outfitting and guiding, access to private land within wilderness, personal-use cabins, administrative uses, and unauthorized uses. Source: www.fs.fed.us/r10/ro/policy-reports/Alaska_National_Forest_Wilderness_and_ANILCA_11_21_05.pdf.

Sequoia and Kings Canyon National Parks Zone Wilderness Uses

Sequoia and Kings Canyon National Parks, California, have released their combined final General Management Plan (GMP) and Final Environmental Impact Statement. The GMP's preferred alternative identifies three management categories for the parks' backcountry, which includes 723,036 acres (292,609 ha) of designated wilderness: major trails, secondary trails, and cross-country areas. Each category prescribes desired natural and cultural resource conditions, desired visitor experiences, appropriate activities, appropriate facilities, and carrying capacities. Source: www.nps.gov/seki/parkmgmt/index.htm.

Fish and Wildlife Service: Rock Creek Mine Good for Grizzlies

IJW Digest readers may recall the ongoing controversy over the first U.S. mine proposed under a designated wilderness area: Montana's Cabinet Mountains Wilderness ("Grizzlies, Bull Trout, Arsenic, and Sinkholes," August 2006). In October 2006, the U.S. Fish and Wildlife Service issued a "non-jeopardy" biological opinion, stating that the mitigation plan for the Rock Creek mine "will be protective of threatened bull trout and should produce a positive net effect for the Cabinet-Yaak ecosystem grizzly bear population." The agency goes on to state that conservation measures by the Kootenai National Forest and the Revett Silver Company will improve habitat security and reduce human-caused mortality of grizzly bears in the Cabinet-Yaak ecosystem, and will provide long-term monitoring data for both grizzly bears and bull trout. Revett has pledged to boost the dwindling grizzly population by establishing a 2,450-acre (990 ha) sanctuary, underwriting the salary of a Montana state bear management specialist for 35 years, and funding a security guard to protect bear habitat. Meanwhile, Montana governor Brian Schweitzer has told the Associated Press, "[Revett's] biggest challenge is [that] on top of the Cabinet Mountains there are several naturally occurring lakes and there are faults that run through that mountain range. Unless they can demonstrate that they are going to be able to pierce into that mountain and not allow that fault to drain those lakes, they are not going to get those permits." Sources: http://mountain-prairie.fws.gov/pressrel/06-60.htm and the Associated Press, December 11, 2006.

National Rifle Association Opposes Colorado Wilderness

The National Rifle Association (NRA) has gone on record opposing the proposed Brown's Canyon Wilderness Area in Chaffee County, Colorado. Bordered on one side by the Arkansas River, the 20,000-acre (8,100 ha) wilderness would encompass Forest Service and Bureau of Land Management lands. An old wagon road runs through the proposed area, and would be permanently closed under wilderness designation. Although hunting would still be allowed, the NRA opposes wilderness designation because, according to Ashley Varner of the NRA's Washington office, "We feel the bill would drastically reduce access to the area for hunters and sportsmen, especially those who are elderly. Without roads in the area, it would make it nearly impossible to pack out big game." The wilderness bill was supported by Colorado's entire congressional delegation, much of the public, as well as the rafting industry, which would like to market "wilderness trips" along the Arkansas River. Sources: *The Denver Post,* November 4, 2006, and *Rocky Mountain News,* November 17, 2006.

Wolves Ruin Employees' Wilderness Experience

Two U.S. Forest Service employees from the (Ogden, Utah) Rocky Mountain Research Station were conducting forest inventory work in Idaho's Sawtooth Wilderness in September 2006 when they observed

a pack of wolves chasing a bull elk across a meadow. Then they heard wolves howling all around them. Climbing onto a rock outcropping, the "very scared" employees radioed for a helicopter to come and retrieve them, although they admitted that the wolves never made any aggressive or threatening moves toward them. The Sawtooth National Forest consequently sent in a helicopter to evacuate the employees. A Forest Service crew later returned to the scene to break down the camp and retrieve their gear. Steve Nadeau, Idaho's wolf program supervisor, said "Holy moly—sounds to me like someone's read too many of Grimm's fairy tales. … Wolves howl in the woods all the time. That's how they communicate." In the future, the Sawtooth National Forest plans to better prepare out-of-area personnel for what they may encounter in the field. Source: *Idaho Mountain Express,* October 11, 2006.

National Council of Churches Announces Wilderness Study Resource

Wilderness landscapes were central to the spiritual journeys of Moses, Jesus, and other biblical heroes, and wildlands continue to provide Christians a venue for peaceful reflection and reconnecting with God. To help Christians and congregations celebrate God's gift of land and wilderness, the National Council of Churches announces a new worship and study resource, Out of the Wilderness: Building Christian Faith and Keeping God's Creation. Developed by the National Council of Churches' Eco-Justice Programs, this resource contains background information and theological reflections on wilderness, sermon starters, a bulletin insert for a themed worship service, suggestions for adult and youth study activities, ideas for personal and congregational action and service, and links to other resources. Intended as a guide for congregations, study groups, and individuals, Out of the Wilderness highlights the theological gifts of wildland, and offers examples of churches and other Christian groups that have deepened their commitment to creation care through wilderness ministries. Wilderness areas provide excellent habitat and wildlife protection, as well as unique opportunities for solitude. Out of the Wilderness encourages the sort of spiritual leadership and renewal that is needed to meet the environmental and social challenges facing humanity. Copies of Out of the Wilderness can be downloaded for free on NCC's Eco-Justice Programs' website, www.nccecojustice.org, or copies can be obtained by contacting NCC Eco-Justice Programs, 110 Maryland Avenue, Suite 108, Washington, DC 20002, USA.

Caribou migration in the Gates of the Arctic Wilderness. Photo courtesy of the National Park Service.

Book Reviews

Bob Marshall in the Adirondacks: Writings of a Pioneering Peak-Bagger, Pond-Hopper and Wilderness Preservationist

Edited by Phil Brown. 2006. Lost Pond Press. 308 pp. $24.95 (cloth). 40 Margret Street, Saranac Lake, NY 12983, USA.

More than 20 articles written by Bob Marshall were compiled by Phil Brown to chronicle Bob's travels in the Adirondacks and efforts to protect state forest preserve lands within the Adirondack Park over the course of Bob's life. Brown notes in his Preface that "Marshall's work with the U.S. Forest Service and the Bureau of Indian Affairs introduced him to the country's grandest scenery—in the Rockies, the Southwest and Alaska—but he never lost his affection for the Adirondacks. He returned often, and he picked up his pen whenever he felt compelled to defend the Forest Preserve against those who would trammel it" (p. viii).

Brown introduces and sets the context for each article Bob wrote from his early years as a college student through his untimely death in 1939. Many of these articles were published locally and are not widely known outside New York State. The book is richly illustrated with many historic and contemporary maps and photographs, and it includes many scenic photographs taken by Bob and George Marshall that have not been previously published; the photos were from a collection of photographs in the Saranac Lake Free Library at Saranac Lake, New York.

The book opens with a reprinted article by George Marshall who chronicles his brother's life in a five-page summary entitled "Adirondacks to Alaska: A Biographical Sketch of Robert Marshall." Part one of the book includes 10 first-person accounts of Bob's legendary hikes and peak-bagging in the Adirondacks that started in 1918 and led to the formation of the Adirondack Forty-Sixers club, which records all of the hikers who have climbed all 46 peaks that were 4,000 feet (1,219 m) in elevation or higher.

Part two of the book includes five previously unpublished manuscripts starting with a first-person narrative on 11 weekend trips in the summer of 1922 that Bob took while a college sophomore at the New York State College of Forestry summer camp on Cranberry Lake, New York. These were Bob's first long hikes of 20 to 40 miles (32.2 to 64.5 km) , during which he visited 94 ponds and climbed 10 mountains. This section of the book closes with a letter Bob wrote to his father, Louis Marshall, in 1918 to explain "Why I Want to Become a Forester in the Future." As Brown notes, "He demonstrates a remarkable self-knowledge for a 17-year-old and a prescient vision of his future" (p. 169).

Part three contains six locally and nationally published articles about preserving wilderness and wildlands within the Adirondack Park that Bob wrote to protest and argue against allowing the building of roads and cabins on state lands, or even forest management on some lands. This section concludes with Marshall's classic statement on the national case for preserving wilderness that was published in the *Scientific Monthly* in 1930, "The Problem of the Wilderness."

Part four includes brief tributes to two great Adirondack explorers—Herb Clark and Mills Blake—that Bob wrote to celebrate some of his contemporaries. The section closes with some observations Bob makes after spending an evening with Albert Einstein at the Marshall family camp on Saranac Lake in the summer of 1936.

Part five includes two excerpts from the Adirondack portion of an unpublished novel by Marshall that was titled "An Island in Oblivion." The supplementary materials at the end of the book includes seven articles by Bob and George Marshall and four other authors who have written about preservation of the Adirondacks—Paul Schaefer, Phil Terrie, Phil Brown, and Bill McKibben.

This book is a remarkable compilation of articles by and about Bob Marshall and his beloved Adirondacks, thoughtfully edited and introduced by Phil Brown. The photographs and maps richly illustrate the articles for those interested in the life of Bob Marshall and those following in his footsteps as a hiker or as a preservationist.

Reviewed by CHAD P. DAWSON, managing editor of *IJW*; email: cpdawson@esf.edu.

A Manufactured Wilderness: Summer Camps and the Shaping of American Youth, 1890–1960

By Abigail A. Van Slyck. 2006. University of Minnesota Press. 296 pp. $34.95 (cloth). Suite 290, 111 Third Avenue South, Minneapolis, MN 55401, USA.

Camp Manito-wish YMCA's Nash Lodge—built in 1925—overlooks Boulder Lake in Boulder Junction, Wisconsin. Generations of campers have gathered inside the whole-log dining hall to share meals and stories of adventure in the surrounding wilderness. Camper cabins and program buildings arc along the lake shore to the north and south.

I was a camper, counselor, and program director at Manito-wish. Today the Manito-wish schedule, activities, traditions, and wilderness trips still mirror the early days of summer camp development. The constellation of buildings, their programs, and the staff leaders are the culmination of decades of intentional architectural and program design.

A Manufactured Wilderness is a cultural landscape tour described as "the intersection of the natural landscape with built forms and social life." According to the author and contrary to camp myth, summer camps were not carved out of virgin wilderness. Rather, camps were started in hayfields, country estates, and clear-cut barrens.

The author insightfully traces the connection between changing societal trends and the camp landscape. Each of the six chapters helped place my own camp experience into a historical context. Chapter 1, *Putting Campers in Their Place*, explores the societal pressure for upper- and middle-class white boys to have a natural or wilderness experience away from the "feminine" influences of school and home.

In chapter 4, *Feeding an Army*, the author clearly describes the evolution of the cultural landscape. At the turn of the last century, campers actively participated in meal preparation, eating at long table rows in an open-air pavilion. At the end of the meal all campers shared cleaning responsibilities. After World War II the camp dining experience had totally transformed: food was prepared by a professional chef and low wage local helpers in an efficient and sanitized kitchen obscured from campers' view. Meals were eaten as a "family" at a round table in an enclosed lodge. A "hopper" brought food to each table and cleared dishes at the end of the meal.

Although the author mentions occasional off-property trips to lumberjack camps and Indian reservations, her focus is on the creation of a contrived wilderness at the camp. Today, tripping is a unique specialization of many camps. "Trips building" is used to provision and train campers for days or weeks of hiking or paddling. Tripping programs are the result of the same 1960s "cultural landscape" that led to the statutory designation of wilderness in the United States.

A Manufactured Wilderness is an interesting historical review for camp directors and camp alumni seeking to understand how and why their camp property and buildings were developed. It illustrates the continuing influence of century-old social trends on current camp programming.

The author, an associate professor of art history, directs the architectural studies program at Connecticut College. The well-researched and referenced narrative is generously supplemented by photographs, maps, plans, and promotional images of camps and camp buildings.

Reviewed by GREG FRIESE (MS, NREMT-P), who is an alumnus of many summer camps and is president of Emergency Preparedness Systems LLC, which provides medical training and communication systems for camps and outdoor programs. Email: gfriese@eps411.com.

Managing Protected Areas: A Global Guide

Edited by Michael Lockwood, Graeme L. Worboys, and Ashish Kothari. 2006. Earthscan. 802 pp. $49.95 (USD) (paper). 8–12 Camden High Street, London, NW1 0JH, United Kingdom.

The 26 chapters in this book are based on or generated at the 5th IUCN World Parks Congress held in Durban, South Africa, in 2003. This collaborative effort was supported by six international organizations and represents the state-of-the-art protected area management expertise and thinking from around the world.

The structure of the book makes it easy to locate specific information. The book is divided into three sections: (1) seven chapters that set the context for protected area management; (2) 19 chapters on the principles and practices of protected area management from establishment through operations and evaluating management effectiveness; and (3) six appendices that range from a chronology of protected areas to compiled lists of worldwide sites of national protected areas, World Heritage Areas, Biosphere Reserves, and Ramsar Sites.

The text of the book is complemented and supported extensively

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Guidelines

For Contributors to *IJW*

EDITORIAL POLICY

The *International Journal of Wilderness* (*IJW*) invites contributions pertinent to wilderness worldwide, including issues about stewardship, planning, management, education, research, international perspectives, and inspirational articles. The *IJW* solicits manuscripts not previously published and not simultaneously submitted elsewhere. Materials revised or reoriented by the author(s) sufficiently to constitute a new contribution are also welcome. Authors are requested to accompany their manuscripts with a cover letter explaining: (a) any previous use of data or information in the manuscript and how the submitted manuscript is different, or (b) that it has not been submitted elsewhere for publication. Please indicate the type of manuscript you are submitting (e.g., peer-reviewed). The International Wilderness Leadership (WILD) Foundation holds copyright for materials printed in the *IJW*. Authors will be asked, prior to publication, to assign their rights to the WILD Foundation, unless the work is not subject to copyright, such as government employees.

IJW reviews all manuscripts submitted before deciding on accepting it for publication or not. No manuscript of any type is accepted prior to *IJW* review of the manuscript as submitted by the author(s). *IJW* reserves the right to edit all manuscripts prior to publication.

MAJOR TYPES OF ARTICLES

1. **Peer-Reviewed Manuscripts.** These are science reports of wilderness-related research. It is strongly advised the Results (factual) and Discussion (interpretive) sections be kept separate to enhance clarity; sections reporting recommendations and implications are encouraged. Articles must have an Abstract of 50 to 100 words, in which objectives, methods, and major findings are clearly summarized. Photos, with captions illustrating key points in the submitted text, are strongly encouraged. The target length for a manuscript is 2,500 words which requires a clear focus, clarity, brevity, and logic in writing.

2. **Editor-Reviewed Manuscripts**
   - **Feature Manuscripts**. These are reports of wilderness-related stewardship, planning, management, international, and education issues presented in a factual manner. Sections reporting recommendations and implications are encouraged. Photos, with captions illustrating key points in the submitted text, are strongly encouraged. The target length for a manuscript is 2500 words which requires a clear focus, clarity, brevity, and logic in writing.
   - **Letters to the Editor and Commentaries** consist of a reasoned argument (approximately 500 words) on an important wilderness issue, such as a research program, a change in administrative procedure, etc. and may culminate in recommendations or proposals for some action. Photos with captions are encouraged.
   - **Announcements and Book Reviews**. Announcements of meetings and important events, photos, administrative policy updates, major personnel changes, and special event information are welcome for the "Wilderness Digest" section. Send materials for the Digest directly to *IJW* Editor Greg Kroll at wildernessamigo @yahoo.com. Suggestions for books to review are welcome, but book reviews are solicited by the Book Review editor, John Shultis.

STYLE AND FORM

Manuscripts must be submitted in final form. The author is responsible for accuracy of data, names, quotations, citations, and statistical analysis. Submissions from the U.S.A. will use English units, followed by metric units in parenthesis. Submissions from outside the U.S.A. will feature metric followed by English units in parenthesis. Target length of articles is 2,500 words; longer articles will be either edited for length or rejected.

First Submission. Initially, three double-spaced printed copies of the manuscript should be submitted to the Managing Editor (alternately, the manuscript can be sent with a cover letter via e-mail with an attached file using MS Word or Word Perfect). All accompanying tables, charts, and photo captions should be included.

Final Submission. Once manuscripts have been reviewed, accepted, and review comments have been incorporated, the final manuscript should be submitted electronically via e-mail or shipped with one computer diskette, clearly labeled with the type and version of computer software, (MS Word or Word Perfect preferred), authors name, and document title as it appears on the manuscript. Paragraphs must be double-spaced and contain no indentations. Subheadings are desirable. Article titles should be short and explicit. The title, author's name(s), and the abstract (if peer-reviewed) should be found at the top of the first page.

About the Author: A photo of the author, waist up and outdoors should be sent with each final manuscript submittal. At the end of the final manuscript, please include a one-sentence biography for each author with affiliation, location, mailing address, telephone number, and e-mail address.

Figures. If the figures contain graphics such as pie charts, maps, bar graphs, etc., authors can submit either of the following: (a) a laser printout of the graphics along with the manuscript—graphics of this type cannot be edited and they will be submitted to the publisher as camera-ready art; or (b) save the graphics as an object in the MS Word or Word Perfect file—hard copies of the graphics must be enclosed with the final manuscript.

Tables. Use the table functions in MS Word or Word Perfect to format tables or include the data in an MS Excel spreadsheet so that we can create the chart without retyping the data. Hard copies showing the table layout must be enclosed with the final manuscript.

Literature Citations. Cite references parenthetically at the appropriate location in the text by author and year (Hendee 1995). List all references alphabetically by senior author, and in chronological order for multiple publications by the same author, at the end of the article. Do not use footnotes or endnotes. Citations should include full name(s) of authors, year of publication, title, source, publisher, and place of publication. Theses and unpublished manuscripts or occasional papers may be included sparingly.

Illustrations and Photographs. All photographs, line drawings, maps, and graphs are designated as figures and must be keyed to the text. They should be consecutively numbered and identified with soft pencil on the reverse side. Photo captions should be listed at the very end of the manuscript and keyed to numbered photos. Glossy black-and-white photos or high resolution color slides, photos, and digital images (300 dpi or higher, 4" by 5" image or larger, prefer jpg type file) are acceptable and they will be printed in black and white in the journal.

QUESTIONS AND SUBMISSIONS

Direct all correspondence pertaining to manuscripts, including name, address, business phone, fax, and e-mail address of the lead author, to:

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