INTERNATIONAL

Journal of Wilderness

In This Issue

APRIL 2000 VOLUME 6, NUMBER 1

INTERNATIONAL

Journal of Wilderness

APRIL 2000 VOLUME 6, NUMBER 1

International Journal of Wilderness

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

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

Manuscripts to: University of Idaho, Wilderness Research Center, Moscow, ID 83844-1144, USA. Telephone: (208) 885-2267. Fax: (208) 885-2268. E-mail: wrc@uidaho.edu.

Business Management and Subscriptions: WILD Foundation, P.O. Box 1380, Ojai, CA 93024, USA. Fax: (805) 640-0230. E-mail: info@wild.org.

Subscription rates (per volume calendar year): Subscription costs are in U.S. dollars only—$30 for individuals and $50 for organizations/libraries. Subscriptions from Canada and Mexico, add $10; outside North America, add $20. Back issues are available for $15.

ISSN # 1086-5519.

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

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

World Wide Website: www.ijw.org.

Printed on recycled paper.

SPONSORING ORGANIZATIONS

• Aldo Leopold Wilderness Research Institute • Indiana University, Department of Recreation and Park Administration • National Outdoor Leadership School (NOLS) • Outward Bound™ • The WILD® Foundation • The Wilderness Society • University of Idaho Wilderness Research Center • University of Montana, School of Forestry and Wilderness Institute • USDA Forest Service • USDI Bureau of Land Management • USDI Fish and Wildlife Service • USDI National Park Service • Wilderness Foundation (South Africa) • Wilderness Inquiry • Wilderness Leadership School (South Africa)

Editorial Perspectives

People: The Wildest Issue

BY VANCE G. MARTIN, EXECUTIVE EDITOR (INTERNATIONAL)

Many of us have memories from childhood of wildlife and wild country that communicate to us a feeling of wild nature that resonates with our own inner nature. Perhaps readers of this journal have wanted to extend such personal feelings into some sort of professional work and thereby "live" that feeling.

That has certainly been my story. Virtually all of my most accessible early memories are connected to birds, trees, animals, and wild landscape. Whether it was seeing a pair of woodpeckers (when I was two years old) that returned (must have been the same pair!) the next year to the old snag in front of our apartment in Memphis; the hazy blue of the Great Smoky Mountains we drove through when I was five; the unmistakable rich sweet smell of the Appalachian and Piedmont forests through which I wandered as a youth; or the lands and wildlife of Africa, Australia, Asia, and the Americas indelibly imprinted on me as my restless rambling grew more pronounced.

All of this love, interest, fun, and yearning coalesced into a personal image of nature devoid of people (except me!)—a one-on-one experience, as it were. However, while the subjective image and dream may never change, the translation of that image into professional work must virtually always encounter and embrace that pesky factor—people. With very few exceptions, we simply cannot have the former without successfully dealing with the latter. "People is the issue," as an old native Australian once told me, "and they ain't simple."

That's the understatement of the old millennium, and its importance cannot be overstated in the new millennium. Our biggest wilderness issue is people because they "is" both the problem and the solution. Our major wilderness threats are population size; consumerism and lifestyle choices; rate of population growth in developing nations; rapidly changing demographics in developed nations; and of course the widespread, simple, and dangerous lack of basic understanding about the essential biological, spiritual, social, and economic services provided by wild nature.

This issue of *IJW,* vol. 6 no. 1, is the first in the new millennium and continues our focus on "people". Yes, we insist on good science in order to present and help clarify natural resource and ecological issues. Our emphasis, however, is on the integration, application, and use of good data and information by people. This ranges from ecosystem science to recreation, habitat management to individual education and therapy, and from protein to policy. With the goal of ensuring an enduring wilderness resource worldwide, we address sustainability from a wide range of perspectives, disciplines, and cultures in order to access to people's minds, hearts, and actions.

The safekeeping of wilderness in this third millennium is in our hands and in those of individuals everywhere. We are aided greatly by those visionaries before us who bucked the inevitable trends of expansion, demand-side economics, and personal greed. Thoreau, Muir, Olson, Marshall, Leopold, Player, Murphy, Foreman, Brower, and many others—with Ann LaBastille and Terry Tempest Williams just two of the many voices within the growing feminine power of the wilderness ranks—who articulated, acted for, and are helping to assure a future for wilderness. Usually in defiance of significant social and personal cross currents that erode the wilderness concept, they created a beachhead for wildness upon which we stand at the outset of this new era. These individuals, and the new modern culture of activists they inspired, have defined what will ultimately be regarded as the most important struggle of our times—to preserve the humility, wonder, and respect for the wild nature that gave us birth and in which we evolved for 2 million years, and the common sense to let some of it continue to do its own thing.

People are the issue, and they are the solution. Let's face it. And let's continue to integrate our youthful dream with the work that needs to be done. **IJW**

Soul of the Wilderness

Can We Stop Trying to Control Nature?

BY JAMES M. GLOVER

Scientists in particular are uncomfortable with the wilderness idea because it seems so subjective, soft, and nonquantifiable.

—Reed Noss

Author's Note: Reed Noss's observation (IJW, vol. 2, no. 2, 1996) should not be surprising, since the purpose of Western science has always been to control nature, not leave it alone. And so, in the following essay, I'd like to examine our compulsion to control nature, see how it conflicts with wilderness preservation, and propose we view wilderness as a healthy form of noncontrolling, "nonaction."

The Great Western Dream of Controlling Nature

The Western obsession with controlling nature goes back at least to the 11th century, when water power was applied to industrial processes (White 1994, p. 11). For several centuries, however, progress was slow because technology and science remained somewhat apart. Technology was largely the domain of working-class toolmakers and craftspeople, while science was the ivory-tower business of the intellectually-curious and radical academic philosophers (White 1994; Mumford, 1970). But this was changed forever in the 1600s, especially by the writings of two European intellectuals, René Descartes and Francis Bacon.

Article author James M. Glover.

Starting with the now famous statement, "I think, therefore I am," Descartes tried to build a system of knowledge based purely on rational thought. He ended up with a view of the universe as a colossal machine, all functions of which could be measured. Today, a mechanistic worldview is still known as "Cartesian," and the belief that all questions can be reduced to calculation is, of course, a hallmark of modern scholarship and problem-solving.

Descartes also contributed to the conceptual separation of humans from nature: The quest for pure objectivity requires a kind of godlike detachment on the part of the observer (humans) from the observed (nature). This separation also made nature an object of possession, control, and exploitation. As Descartes himself put it, the whole point was to "render ourselves the lords and possessors of nature" (Descartes 1960 [1637, 1641], p. 45).

But the man who really linked science and technology was Francis Bacon. His book, *New Atlantis,* was a utopian vision of a research community churning out all manner of data to "the effecting of all things possible" (Bacon 1942 [1627], p. 288).

Following Bacon and Descartes come a long line of individuals—from Ben Franklin and Dr. Pavlov to B. F. Skinner and Bill Gates, and institutions, from the Hudson Bay Company to the National Air and Space Administration—to further "the effecting of all things possible." Thus having

been increasingly about power and control, Western science has furthermore been a patriarchal institution—funded by men with power motives and conducted almost exclusively by males in highly competitive milieus.

Do these "masculine" qualities also characterize the applied-science fields of resource and wilderness management? Perhaps not as extremely as, let's say, physics, which in the telling parlance of scientists is the "hardest" discipline, while others, like biology and, even more so, behavioral/social sciences, are considered "softer." On the other hand, most natural resource fields (forestry, fish, wildlife, range management) remain highly male-dominated and pride themselves on rational or scientific approaches to their work. They perhaps have more to do with "conquering" or "controlling" nature than they care to acknowledge.

A Cutting Example

The "control of nature" then, is a doctrine that has so permeated Western culture as to almost define it. A fundamental acceptance of the doctrine, I believe, explains the strong resistance by many—including resource managers—to any more land preservation beyond the 4% or so in the United States that's presently set aside in wilderness and parks. And an intuitive resistance to controlling nature explains not only the persistence of mainstream preservationists, but also the seemingly more extremist views of those who protest, picket, and practice civil disobedience at various controversial sites.

A good example is occurring in the Shawnee National Forest in southern Illinois, near my home. Forest officials there have been trying for several years to cut and sell some mature pine trees that, in the 1930s, were planted on ridgetops in a part of the forest called the Bell Smith Spring area. The U.S. Forest Service (USFS) originally proposed cutting the pines as a routine commercial harvest. Environmentalists stopped it on the grounds that it was clearcutting. The USFS then slightly altered the plan, called it something else, and tried again. It was successfully blocked again, so USFS came back for a third time and called it "ecological restoration." This time, they explained, the pines needed cutting to restore the area to hardwoods, which had dominated before the land was cleared for farming about 100 years ago (USDA Forest Service 1996). This move, however, cost the agency credibility, for hardwood saplings were already filling the understory of the mature pines, and everyone agreed the ridgetops would revert to hardwood on their own in another 20 years or so, as the planted pine trees died.

Smoke at Yellowstone National Park. Photo by James M. Glover.

The plan included a great many other interventions, ranging from tree-girdling to road construction, all in a 27,000-acre parcel that even without improvements had already been declared a National Natural Landmark. In other words, to skeptics it seemed mostly like a plan to control nature for the sake of controlling nature, especially since nature was pursuing the same trajectory on her own.

In fairness to the USFS, the arguments put forth by environmentalists were equally specious. Using what the law gives them, they identified certain of the state's rare or endangered species that might occur in the area and might be somehow dependent on those pines that had been planted some 60 years ago. They even found themselves arguing in favor of a rather noxious exotic plant, Japanese honeysuckle, which a state-threatened mammal, the golden mouse, has come to rely on (Race et al, 1996). These individual species, of course, were not the objectors' major concern. I doubt many protesters knew about them before they went looking. I believe

A Crane admires his reflection in the Florida Everglades. Photo by James M. Glover.

A moose hip-deep in vegetation at Yellowstone National Park. Photo by James M. Glover.

these objectors were mainly rebelling against a culture that has raised rationalism to an irrational level. They see our drive to control as a kind of cultural neurosis, the group equivalent of an overbearing, obsessive-compulsive personality. They are not necessarily, as often accused, looking for a place they imagine has never been disturbed by humans, free from original sin, the Garden of Eden. They just want a few places left alone. They want a little chaos left behind as, out of necessity, we become more organized and systematized in order to deal with the crowdedness and dangerous machinery with which our science has presented us.

A pair of swans in Yellowstone National Park. Photo by James M. Glover.

I believe that was Thoreau's (1993 [1862]) main point in his famous essay, "Walking," when he said, "I wish to speak a word for nature, for absolute freedom and wildness, as contrasted with a freedom and culture merely civil … for there are enough champions of civilization: the minister, and the school-committee, and every one of you will take care of that" (p. 49).

That essay is a rebellion against too much rationality. At one point in it, Thoreau describes how he roots for a neighbor's cow that breaks out of its pasture in the spring, boldly swimming the swollen river, reasserting its "native rights" (p. 66). This, of course, is a metaphor for the modern human condition. For humans, Thoreau believes, can also be overdomesticated. They need an environment not totally tamed and they need to behave not always rationally.

Wilderness Deconstruction

The moral imperative to control nature, and its corollary, the fear of letting nature run wild, runs so deep that there's currently an intellectual reaction against too much preservation. Environmental historian Michael P. Cohen calls this "the [recent] deconstruction of the 'wilderness idea' of the 1950s" (1996, p. 41).

Perhaps the most prominent (and unlikely) of these deconstructionists is William Cronon, a prizewinning historian and member of the governing council of The Wilderness Society. In 1995 Cronon published an essay, "The Trouble with Wilderness," that has already appeared in one journal and three different volumes of essays (Callicott and Nelson 1998; Miller and Rothman 1997; Cronon 1996), and has been referred to by the chair of history at Yale as "already classic" (Winks, 1999). Cronon emphasizes that "wilderness" is a cultural construct stemming largely from European romanticism and Americans' infatuation with the frontier. Our concentration on it, he says, distracts the environmental movement from its larger mission, which should include developing sustainable economies and making the nonwilderness environment—the one we truly inhabit—healthier.

Those points, it seems to me, are good ones and worth our consideration. But they do not justify Cronon's ultimate vision of wilderness, which is very controlled. He predicts, in effect, that biological diversity will in the future be sustained not by protecting ecosystems but by "the most vigilant and self-conscious management" of them (a view not all ecologists agree with, as we'll see shortly). Moreover, he uses the image of Aldo Leopold's famous attempt at restoration to invent a new definition of wilderness, which is really a garden. In the film *Wild by Law* (Hott and Garey 1991), Cronon says:

> *For Leopold, the conservationist, the person preserving land—leaves a mark on that land, manages it toward the health of the community. To have as many creatures, as many organisms, living on that land as possible. So that it really is possible to manipulate wilderness, to make it more wild. And that seems paradoxical for people who imagine that wilderness is a place you just let be and let go just by itself. That's not what Leopold did.*

Well, that's not what Leopold did *there*. But it's news to me that Leopold was creating wilderness at his Sand County farm, or that he thought he was. (It was certainly different than the Gila Wilderness he helped create.) I guess I'm one of those surprised people who do "imagine that wilderness is a place you just let be and let go just by itself." I always thought that was the point. The fact that it has to be "managed" (mainly to minimize recreational impacts) doesn't change the essential goal of letting its natural processes occur with the least human interference possible.

In any case, to at least one observer, Cronon sounds like he may not exactly want to control nature, but is rather afraid to leave it alone. He feels we must "make our mark" on it, nurse it back to health, make it "wilder," maximize the number of species on it. In short, he views it mechanistically. It's like a beat-up old machine that won't get working again without a good mechanic, a lot of new parts, and a lot of human labor.

And that, I think, underlies the shaky support that wilderness preservation still enjoys: After centuries of nearly total commitment to controlling nature, we are still very afraid to set aside a small percent of it and just leave it alone. The endless list of proposed reasons why we'd better not leave it alone is itself testimony to this fear. The list includes, at various places, perceived overgrazing by certain megafauna; the need to burn certain areas on a scheduled basis either because indigenous people once did or to maintain someone's vision of what should be growing there; "ecological restoration" in general; getting rid of exotic species; facilitating more recreational access; improving hunting, fishing, or birding; and—not to be forgotten—to extract raw materials that otherwise might avoid service to the industrial economy.

I believe these objectors were mainly rebelling against a culture that has raised rationalism to an irrational level. They see our drive to control as a kind of cultural neurosis, the group equivalent of an overbearing, obsessive-compulsive personality.

One hates to sound cynical about ecological restoration; it's a bit like opposing dental hygiene or sober driving. My skepticism, however, is threefold: First, as we've seen, ecological restoration can be a nice-sounding phrase for business-as-usual. Second, it can easily become a short-term substitute for the sounder solution to ecological stability, which is to preserve larger areas with connecting corridors. And third, while it may make us all feel good because we're doing something, it is not clear at all that a lot of it will work.

In *The Sixth Extinction,* Richard Leakey (1995) refers to the discovery that ecological restoration is hugely difficult once a system has become sufficiently unraveled. Ecologist Stuart Pimm calls this the Humpty Dumpty Principle. Leakey cites the North American Prairie and Florida Everglades as two examples. There, and other places, says Leakey, "Ecologists' inclination was simply to gather the requisite species for the ecosystem they were planning to restore, and then let them loose in the chosen habitat. They were puzzled when they repeatedly discovered it didn't work" (p. 167).

Nonaction

There's an old Eastern idea, sometimes called *wu-wei,* which, roughly translated, means nonaction. On a personal level, it means taking some time to do nothing, and just be, to trust things will be OK without relentless effort to control them. As Alan Watts (1989 [1957], p. 18) puts it, it's to restrain from "'action,' 'making,' 'doing,' 'striving,' 'straining,' or 'busyness.'" Or, as Lao Tsu some 2,300 years ago, put it in the classic *Tao te Ching:*

> *Less and less is done*
> *Until non-action is achieved,*
> *When nothing is done, nothing*
> *is left undone.*
>
> *The world is ruled by letting*
> *things take their course*
> *It cannot be ruled by interfering*
> *(Lao Tsu 1989, p. 50).*

Treetop conference in the Florida Everglades. Photo by James M. Glover.

On a cultural level perhaps it would be worthwhile to view wilderness as the *wu-wei* of resource management. If, as individuals, we can be healthier doing nothing with some of our time, perhaps as a species we can also be healthier by doing nothing with some of our space. The ecological results might be less important than what such a notion does for us. For it reminds us that we need not be striving, improving, and controlling all the time and every place. We can accept some places just as they are, live with certain processes without trying to channel them, watch events happen without judging them. For a culture so enraptured with doing and achieving, the spiritual and symbolic implications of such nonaction are large.

The Western dream of controlling nature is deeply ingrained. Even in wilderness areas, it seems, we can't stop trying to control. I believe we need to take a lesson from Lao Tsu and other Eastern sages and recognize that the world cannot be ruled by interfering. **IJW**

JAMES M. GLOVER is an associate professor of recreation in the Department of Health and Recreation, Southern Illinois University, Carbondale, Illinois 62901, USA. His duties include courses in wilderness leadership in conjunction with the Wilderness Education Association. Telephone: (618) 453-4331. E-mail: jglover@siu.edu.

REFERENCES

Bacon, F. 1942. *New Atlantis.* In *Essays and New Atlantis*. Toronto: D. VanNostrand. (Original work published 1627.)

Callicott, J. B., and M. P. Nelson, eds. 1998. *The Great New Wilderness Debate: An Expansive Collection of Writings Defining Wilderness from John Muir to Gary Snyder.* Athens: University of Georgia Press.

Cohen, M. P. 1996. Comment: resistance to wilderness. *Environmental History* 1: 33–42.

Cronon, W. 1996. The trouble with wilderness: or, getting back to the wrong nature. *Environmental History* 1: 7–28.

Descartes, R. 1960. *Discourse on Method and Meditations.* Indianapolis, Ind.: Library of Liberal Arts. (Original work published 1637, 1641.)

Hott, L., and D. Garey. 1991. *Wild by Law: Aldo Leopold, Bob Marshall, Howard Zahniser and the Redefinition of American Progress* film/videocassette. (Available from Direct Cinema, Ltd., Box 69799, Los Angeles, Calif. 90069-9976, USA.

Lao Tsu. 1989. *Tao te ching,* trans. by G. Feng and J. English. New York: Vintage. (Original work published ca. 350–250 B.C.)

Leakey, R., and R. Lewin. 1995. *The Sixth Extinction: Patterns of Life and the Future of Humankind.* New York: Anchor Books.

Miller, C., and H. K. Rothman, eds. 1997. *Out of the Woods: Essays in Environmental History.* Pittsburgh, Pa.: University of Pittsburgh Press.

Mumford, L. (1970). *The Myth of the Machine:* Vol. 2, *The Pentagon of Power.* New York: Harcourt Brace Jovanovich.

Noss, R. 1996. Biodiversity, ecological integrity, and wilderness. *IJW,* 2 (2): 5–8.

Race et al. (1996). Notice of appeal (by "Petitioners" opposing 5/6/96 Decision Notice and Finding of No Significant Impact … in Opportunity Area 6). (Available from Eastern Region, USDA Forest Service.)

Thoreau, H. D. 1993. Walking. *In Civil Disobedience and Other Essays.* Mineola, New York: Dover Publications: 49–74. (Original work published 1862.)

USDA Forest Service 1996. Decision notice and finding of no significant impact: ecological restoration and vegetation management in Opportunity Area 6. Pope County, Ill.: Vienna Ranger District.

Watts, A. 1989. *The Way of Zen.* New York: Vintage Books. (Original work published 1957.)

White, L. 1994. The historical roots of our ecological crisis. In *Environmental Ethics: Readings in Theory and Application,* ed. by L. P. Pojman. Boston: Jones and Bartlett: 9–14. (Original work published 1967.)

Winks, R. W. 1999. Review of Miller and Rothman (1997). In *Environmental History* 4: 274–275.

DIRT
by Sarah Johnson

Dry clots measure the paces between
catclaw, yucca, fierce bands of cactus,
shreds of grass pitched up a slope:
this is Earth, here
where I plant my boot-at-a-time
and from the boots, ankles upward, rise
among serpent shoulderings of air
through channels of warmth, fire, relief,
to my hair flapping free of my hat—
to my height—
my eyes, my straight-edge mouth
dubbing the figures around me:
prickly pear, pincushion, staghorn cholla;
from waist-high neighbors to utmost guarded
pale protrusions through mountain miles of dirt—
dirt that is everywhere, that needs no name,
is merely skin and fiber and sinew,
commonplace secrets of the body.

Roadless Area Policy, Politics, and Wilderness Potential

Toward Understanding President Clinton's Directive to the U.S. Forest Service

BY JAY O'LAUGHLIN AND JOHN C. FREEMUTH

The struggle over national forest "roadless areas" dates back at least 75 years. Today development of these lands, including roads, generally precludes potential future wilderness designation. Bill Clinton, president of the United States, recently invigorated this struggle with a controversial roadless area policy initiative:

> *Within our national forests there are large parcels of land that don't contain roads of any kind … these areas represent some of the last, best unprotected wildland anywhere in our nation. … Today, we launch one of the largest land preservation efforts in America's history to protect these priceless, back-country lands. … Through this action, we will protect more than 40 million acres, 20 percent of the total forest land in America in the national forests, from activities such as new road construction which would degrade the land.*
>
> *—U.S. President William J. Clinton, October 13, 1999*

This policy directive once again reminds us that few things in U.S. politics are ever really settled. For a time there was an agreement, and an established set of procedures, for addressing the roadless area issue. Congress specified that proposed uses were to be identified in formal comprehensive land-use plans for each national forest. The U.S. Forest Service (USFS) could recommend their addition to the National Wilderness Preservation System (NWPS), administratively limit development of roadless areas, or the lands could be made available for certain types of uses, including timber harvesting and mechanized recreation, which generally involves building new roads.

Background

The National Forest System (NFS) consists of 192 million acres, roughly 8.5% of the land in the United States. These lands include 34.7 million acres of legally designated wilderness, plus another 60 million acres of inventoried and uninventoried roadless areas (SAF 1999; TWS 1999). Five states have within their borders 39.8 million acres of the 60 million total: Alaska, 14.8 million acres; Idaho, 9.4; Montana, 6.0; Colorado, 5.5; and California, 4.1 million acres. Seven other western states have a total of 17.9 million acres. But this is not just a western issue, as 25 other states have a total of more than 2 million acres involved.

The Clinton proposal did not spring up overnight. In November 1997 the president directed the USFS to develop a roadless area management policy. In January 1998 the agency proposed an 18-month moratorium on most new road construction while a road management policy was formulated, and which went into effect in February 1999 (USDA-FS 1999b).

This directive pushes the USFS in a direction predetermined by the president, and circumvents policy and the planning processes defined by Congress. If the president is impatient with the pace of USFS efforts to manage lands through the existing planning processes, he is not alone. Many, if not most, people interested in national forests are frustrated. The General Accounting Office observed that the USFS decision-making process is broken (US-GAO 1997). An administrative proclamation won't fix this problem because Congress, not the administration, has the ultimate authority to make federal land-use policy.

In spring 2000 the three roadless area options will be fleshed out through public comments and then translated into management alternatives for additional public comments in a draft EIS.

Proposed Alternatives and Selection Process

Shortly after the president's October 1999 announcement, the USFS published a formal Notice of Intent (NOI) to promulgate federal regulations for "protection of remaining roadless areas," with protection undefined (USDA-FS 1999b). The NOI is the first step federal agencies must take to initiate the National Environmental Policy Act (NEPA 1969) procedures for any "major" federal action impacting the environment. Thus, the USFS intends to complete a NEPA Environmental Impact Statement (EIS) for the roadless area policy. A draft EIS will be released for public comment in spring 2000, with final regulations adopted in late 2000.

The NOI proposes a two-part process (USDA-FS 1999c): Part one immediately restricts activities in all inventoried roadless areas with three possible options: (a) prohibiting new road construction and reconstruction, (b) prohibiting both roads and commercial timber harvest, and (c) allowing only activities that would maintain or enhance the ecological values of roadless areas, which presumably could include timber harvest to meet noncommercial objectives. Part two provides additional but not immediate direction for the management of inventoried roadless areas, and whether and how to restrict activities in uninventoried roadless areas. Part two would be implemented gradually through the National Forest Management Act (NFMA) forest planning process (NFMA 1976), with national forest supervisors bringing these decisions to a local level.

President Clinton's intention seems to be that roads and timber harvests for any reason would be forever banned in at least 40 million acres of inventoried roadless areas. But he has left the final decision up to the USFS, directing them to create regulations for roadless area management. The alternatives identified in the NOI are not detailed enough to say what might happen. The EIS to be released in spring 2000 will likely provide clarification.

Potential for Additional Wilderness

One might assume from President Clinton's proposal that this is the only way to limit development of national forest lands. That is incorrect. The NWPS provides the protection the president is seeking. But only Congress, not the president, can designate wilderness.

The president's action cannot by itself resolve the larger debate over which lands to add to the NWPS. This debate is contentious, with a lot at stake in western states, such as Idaho with 9.4 million acres of roadless land, where decades of debate have failed to resolve which lands to add to the NWPS and what to do with the remaining roadless lands (MacCracken et al. 1993). But the president's proposal could freeze land in "roadless" status until Congress marshals enough votes to act. This presidential move reframes the argument by directing the USFS to create a new land-use category of de facto wilderness that, for lack of a better term, can be called permanent roadless areas.

Executive Privilege and the "Public Interest"

Concerns about the legitimacy of administrative discretion as an expression of the "public interest" have grown along with the scope of government. At higher levels in the bureaucracy, administrators have considerable discretion over many of the problems pursued, solutions devised, and strategies implemented. Such discretion is counterbalanced by process designs whereby the capacity of individuals and interest groups to realize their chosen ends is maintained, while public administrators "strive to remain neutral among competing conceptions of the good" (Sandel 1988). This ideal "neutral state" is manifested in two related theories of the "public interest": interest group intermediation (pluralism), and net benefit maximization. Civic discovery is a third, more communitarian, theory (Reich 1988).

By issuing directives from the executive office with a predetermined outcome attached, the president either precludes the administrative agency from making its own recommendations for roadless lands based on pluralistic viewpoints discovered during public deliberation, or forces the agency to defy the president. Clinton's directive distorts the mandated NFMA process of identifying and recommending additions to the NWPS through a forest-by-forest land-use planning process.

But while the Clinton roadless policy is implemented, the time-consuming inertia of governmental process could

allow the next president to undo what Clinton hopes to do. Development interests and western congresspeople will attempt to thwart a new roadless policy until after the national elections in November 2000, calling for a more comprehensive policy that will not only protect the nation's treasured lands but include funding for basic services in resource dependent communities.

Analysis

The merits of the new roadless policy are debatable. Environmentalists generally have applauded it because new roads for timber harvesting or mechanized recreation are precluded (see for example, TWS 1999). However, there does not appear to be any clear justification for the action. Instead, confusion reigns, accompanied by questions about whether this might force Congress to step in and resolve the status of remaining roadless lands, or whether a future president could reverse Clinton's action.

The Clinton policy lacks a scientific imperative, even though such arguments are part of the debate. American politics increasingly feature "advocacy science." Opponents and proponents of policy change invoke science to support their preference. Here, a particular value position—new roads degrade the land—finds some science supporting a preferred policy choice. Conservation biology tells us roads lead to a loss of biodiversity, therefore we must stop building roads. Thus, proponents offer the president an epistle warning that road construction increases ecological risks (Heritage Forests Campaign 1999). Opponents argue that high risks of catastrophic wildfire and disease and insect infestation on 65 million acres of national forest lands place "an unbearable burden on ecosystems already fighting for survival" and the new policy will make the situation worse (AF&PA 1999).

The roadless protection directive also contradicts another new Clinton administration policy in several ways. The USFS currently is revising NFMA planning regulations in a broad sweeping approach that redefines the mission of the agency as protecting ecosystem sustainability (see USDA-FS 1999a). The roadless declaration violates the spirit, if not the substance, of collaboration, a key feature stressed in the regulations (USDA-FS 1999a, sec. 219.12). Instead, the Clinton policy is a top-down command to the USFS. Any attempt to negotiate what various publics might consider acceptable development of particular roadless areas is no longer an option. Timber harvesting must be done on land already roaded. Put another way, the new roadless policy reduces the amount of land available for timber harvesting. From the perspective of timber interests and many rural communities there is less on the table to negotiate about. From the national political perspective, perhaps the fact that western interior states represent a small minority of the population and electoral votes precludes the need for collaboration. The effect of the Clinton roadless directive is that "national guidelines," without local negotiations with affected interests, should guide managers as to "appropriate activities" in roadless areas.

If the national forest planning and decision processes were not in gridlock, wilderness advocates could expect roadless areas deserving protection under The Wilderness Act to be designated.

Conclusion

These observations lead us to the conclusion that the roadless area directive was too hastily crafted, and it stands isolated from other efforts of the USFS to determine through existing policy processes the mission and purpose of national forest lands. If the USFS follows the president's direction, an alternative prohibiting roads and commercial timber harvests is likely to be preferred regardless of public comments. In spring 2000 the three roadless area options will be fleshed out through public comments and then translated into management alternatives for additional public comments in a draft EIS. Although NEPA procedures call for public participation, in reality NEPA is not binding on the agency, which can begin to implement its preferred alternative after required procedures have been followed. The administration's 18-month moratorium on building new roads remains in effect until October 2000. By that time it is possible that the USFS could have in place one set of final regulations for planning management activities on the national forest roaded lands, and another set for limiting management of 40 to 50 million acres of inventoried roadless areas.

In addition to protecting values associated with undeveloped lands, the roadless area issue is about access to the public lands for a variety of purposes, including timber and recreation. Finding a balance between development and preservation is a century-old debate with important interests on both sides. The directive removes roadless lands from the picture, which could reduce the potential for national forests to help

meet the nation's demand for wood-based products and developed recreation. The effect on recreation is paradoxical. The USFS is staking much of its economic future in recreation. Even in the northern Rocky Mountains, 74% of all recreation activity days are associated with roads; banning new roads would limit many popular forms of mechanized recreation, including the perennial front-runners, sightseeing and driving for pleasure (Haynes and Horne 1997).

The roadless area issue is a symptom of a deeper malaise. The USFS mission priority is changing from production of goods and services to sustaining ecological integrity, a shift the General Accounting Office (US-GAO 1997) observes is occurring without congressional approval. If the national forest planning and decision processes were not in gridlock, wilderness advocates could expect roadless areas deserving protection under The Wilderness Act (TWA) be designated. That is not happening.

The people deserve an active debate to determine the fate of each individual roadless area, not a politically driven proclamation that these public lands shall not be developed. Expect a pro forma NEPA debate in 2000, but don't look for new roads or timber harvests in roadless or unroaded areas of the national forests anytime soon. Also expect deliberations to follow the well-rutted contours of past preservation versus development debates.

Is There Another Approach?

Maybe we need to rethink our view of the landscape. If one believes in restoration ecology, why not reframe the debate? Keep, for now, all existing congressionally designated wilderness areas. Plan for some key additions to the NWPS by considering what the system lacks. Then put the rest of the NFS on the table. Could roaded lands be unroaded, restored, and added to the NWPS? Could roadless lands be roaded for a time, then in the future unroaded, restored, and reconsidered for wilderness? Is our concept of wilderness flexible enough to allow this? Would TWA allow it? Could funding for restoration activities help sustain rural communities? The current gridlock is not resolved by the president's roadless directive, which only invites counterdirectives by a new president. The ecosystem approach requires thinking in terms of landscape change over time, and maybe by including restorative possibilities, this view could expand the roadless area debate toward resolution serving more interests. **IJW**

JAY O'LAUGHLIN is director, Idaho Forest, Wildlife and Range Policy Analysis Group, and professor of forest resources, University of Idaho, Moscow, Idaho, 83844-1134, USA, where he teaches natural resources policy analysis. E-mail: jayo@uidaho.edu.

JOHN FREEMUTH is senior fellow, Andrus Center for Public Policy, and professor of political science, Boise State University, Boise, Idaho, 83707, USA, where he teaches environmental and public lands politics. E-mail: jfreemu@boisestate.edu.

REFERENCES

American Forest & Paper Association (AF&PA). 1999. Extremist policy spells disaster for National Forest System. Statement of W. Henson Moore, AF&PA president and CEO. Available online: <www.afandpa.org/news/PressReleases/Clinton_rel.html> (10/13/99).

Haynes, R. W., and A. L. Horne. 1997. Economic assessment of the basin. In *An Assessment of Ecosystem Components in the Interior Columbia Basin,* ed. by T. M. Quigley and S. J. Arbelbide. General Technical Report PNW-GTR-405. Portland, Ore.: U.S. Department of Agriculture-U.S. Forest Service, Pacific Northwest Research Station: 1715–1869.

Heritage Forests Campaign. 1999. Scientists support wild forests. Washington, D.C. Available online: <www.ourforests.org/endorses/scientistletter.htm> (11/15/99).

MacCracken, J. G., J. O'Laughlin, and T. Merrill. 1993. *Idaho Roadless Areas and Wilderness Proposals.* Report no. 10, Idaho Forest, Wildlife and Range Policy Analysis Group, University of Idaho, Moscow. Executive summary available online: <www.uidaho.edu/cfwr/pag> (11/1/99).

National Environmental Policy Act (NEPA) of 1969. Public Law 91-190, 83 Stat. 852; 42 U.S. Code ' 4321, et seq.

National Forest Management Act (NFMA) of 1976. Public Law 94-588, 90 Stat. 2949; 16 U.S. Code ' 1600, et seq.

Reich, R. B. 1988. Policymaking in a democracy. In *The Power of Public Ideas,* ed. by R. B. Reich. Cambridge, Mass.: Ballinger: 123–156.

Sandel, M. J. 1988. The political theory of the procedural republic. In *The Power of Public Ideas,* ed. by R. B. Reich. Cambridge, Mass.: Ballinger: 109–122.

Society of American Foresters (SAF). 1999. New forest roads initiative *and* Roadless area comments. Available online: <www.safnet.org/archive/roads1199.htm> (11/15/99).

The Wilderness Society (TWS). 1999. Stand by your lands. Available online: <www.wilderness.org/standbylands/forests/index.htm> (11/1/99).

USDA Forest Service. 1999a. National Forest System land and resource management planning: proposed rule. *Federal Register* (October 5) 64 (192): 54074–54112.

_____. 1999b. National Forest System roadless areas: notice of intent to prepare an environmental impact statement. *Federal Register* (October 19) 64 (201): 54306–54307.

_____. 1999c. Roadless area project questions and answers. Available online: <roadless.fs.fed.us/faq/shtml#policy> (11/30/99).

U.S. General Accounting Office (US-GAO). 1997. Forest Service Decision-making: a framework for improving performance. GAO/RCED-97-71. Washington, D.C.: U.S. Government Printing Office.

A National Wilderness Preservation System Database

Benefits, Limitations, and Future Needs

BY SHANNON MEYER AND PETER LANDRES

Abstract: As federal wilderness management agencies in the United States move from issues of allocation to issues of management, information about the status and trends of wilderness character and its management becomes increasingly important. This paper discusses the organization, content, and use of the recently published database, *A National Wilderness Preservation System Database: Key Attributes and Trends, 1964 through 1998*. Future needs and issues related to wilderness information are discussed. The need for interagency coordination and cooperation in developing shared wilderness information goals is stressed. Details are provided from every wilderness, standard database format and structure, and administrative infrastructure to develop and maintain this shared information.

When the National Wilderness Preservation System (NWPS) was established by The Wilderness Act of 1964, it contained 9.1 million acres of wilderness in 54 U.S. Forest Service (USFS) areas. As of 1998, the NWPS was composed of more than 104 million acres in 625 wildernesses distributed across 44 states and managed by four federal agencies (Bureau of Land Management [BLM], USFS, U.S. Fish and Wildlife Service [USFWS], and the National Park Service [NPS]). With this growth in size and complexity, and the constant legislative and administrative changes to the system, there is an increasing need for a single, accurate, and up-to-date source of information about all wildernesses within the NWPS. The purpose of this article is to discuss the construction, content, and use of the recently published database, *A National Wilderness Preservation System Database: Key Attributes and Trends, 1964 through 1998* (Landres and Meyer 1998), hereafter referred to as the NWPS Database.

The Need for a New NWPS Database

There are several reasons why a new, up-to-date compilation of information about the NWPS is needed. First, the previous wilderness database contained many errors. In the late 1980s, individuals in the Washington office of the BLM had the foresight and commitment to create the first agency-developed compilation of information on the entire NWPS. This database became the standard source of information on the NWPS used by the four agencies and many private organizations. Although the BLM's database has been periodically updated, it still contains errors due to inaccurate reporting by the individual agencies, inconsistent criteria for defining the types of information supplied by the agencies, and legislative and administrative changes to the NWPS. In addition to the BLM's database, other compilations of NWPS information (Reed 1987, 1988; Browning et al. 1988; Rosenberg 1994) are now out-of-date. Second, with four independent agencies and continuous legislative and administrative changes to the NWPS, there is a lack of consistency and accuracy in reporting and maintaining wilderness information. Third, there is substantial variation in the quality and types of information reported by the agencies, largely driven by differences in their institutional goals and missions (Landres et al. 1998). Finally, with expanding socioeconomic pressures to develop currently undeveloped federal lands, there is increasing interest and need from public and private sectors for a single source of reliable information on the key attributes of wildernesses nationwide.

(PEER REVIEWED)

A National Wilderness Preservation System Database

The NWPS Database (Landres and Meyer 1998) provides readily accessible and accurate basic descriptive information for every wilderness in the NWPS. For each wilderness the database contains:

- legally correct name
- state(s) in which it occurs
- administering agency or agencies
- administrative units
- applicable public laws and dates of enactment
- current acreage and historical acreage
- acreage added or subtracted by each wilderness law

The information included in the NWPS Database is organized in a variety of formats to facilitate different users' needs (Table 1). In addition to its availability in printed format, the NWPS Database is accessible on the Internet at http://www.wilderness.net/nwps. This site allows users to sort, query, and generate customized reports.

The NWPS Database is based on the most current, accurate, and legally defensible information available at the time of its publication. The general sources for data include legal and administrative documents, including congressional documents, agency publications, and personal communications with agency personnel. To verify wilderness names, we relied upon the legislation establishing the wilderness and the United States Code (Title 16). In some cases, the name that has commonly been used for a wilderness is not legally correct due to either a misspelling or colloquial usage. We used agency publications and wilderness specialists for information on the administration and size of wilderness units.

The NWPS Database distinguishes between historical acreage, which is the acreage listed in the establishing legislation, and current acreage, which is supplied by the administering agencies. Although the original public law acreage is important from a historical perspective, the administrative acreage is more useful for current assessments, because public law acreage is usually only an approximation. After an area becomes part of the NWPS, it is eventually mapped by the managing agency, and the public law acreage is updated with this more accurate information. These current acreage numbers were gathered from each agency's official publications and then verified by wilderness specialists within that agency.

The NWPS Database also examines special cases that deviate from the general sources listed above. While the database primarily uses the legislated wilderness name, exceptions have been made in certain cases. These include name changes made by the Board of Geographic Names (BGN), firmly established administrative changes, and legislative errors. For example, there was confusion over the spelling of the Anaconda Pintler Wilderness in Montana, which was finally corrected by the BGN in 1978. In addition, a legislative error gave the same name, Wambaw Swamp, to two distinct USFS wildernesses in South Carolina. The NWPS Database adheres to the administrative usage by listing both a Little Wambaw Swamp Wilderness and a Wambaw Swamp Wilderness. Agency changes of administrative names are included in the NWPS. This generally applies to the combination of National Forests such as the Beaverhead-Deerlodge national forest in Montana.

Differences between information in previous databases and the NWPS Database are also explained. In most cases the differences are the result of updated acreages. However, within previous databases there are a number of wrong names, legislated changes, and mistaken units. For example, earlier compilations (Reed 1987; Rosenberg 1994; and the BLM's database) use misspelled names such as Dome Land instead of Domeland, and Mount Wrightson instead of Mt. Wrightson. In addition, in the years since The Wilderness Act was passed, there have been nine legislative name changes of existing wildernesses, beginning in 1984 with the changing of the Minarets Wilderness to the Ansel Adams Wilderness (P.L. 98-425), to the 1997 law renaming the Everglades Wilderness after its long-time advocate, Marjory Stoneman Douglas (P.L. 105-82).

Information provided in the NWPS Database accurately describes the current state of the wilderness system as of June 1998. These data allow the

Summary	Agency Acreages	State Acreages	Public Laws and Acreages	Administrative Units (BLM/ FS)
Name	Name	Name	Name	Name
Agency	State	Agency	Agency	State
State	Administrative Unit	Administrative Unit	Public Law(s)	Region (FS only)
Year Designated	Current Acreage	Current Acreage	Date of Enactment	Administrative Unit
Current Acreage			Public Law Acreage	Administrative Sub-unit

Table 1—Description of the components of each spreadsheet in the 1998 NWPS Database.

analysis of general trends across the NWPS. The NWPS Database publication summarizes trends in the historical and geographical distribution and designation of wilderness. Figures 1 and 2 illustrate the dramatic difference between the number of wilderness areas and acres designated yearly in each agency. These figures show the different size of each agency's wilderness holdings, as well as the rate and timing of wilderness designation within each agency. The percentage of each agency's total acreage that is designated wilderness is shown in Figure 3. This figure clearly demonstrates the dominance of wilderness in the National Park Service's (NPS) land base. Other trends analyzed in the NWPS Database are the percentage of wilderness in different regions, the size-class distribution of wildernesses in the NWPS, and the percentage of each state that is in wilderness.

Benefits of the NWPS Database

The NWPS Database provides a starting point for ongoing wilderness data collection. The intent with this database was to create a framework of accurate information that could be updated and upon which additional layers of data could be overlaid. This compilation is both easily accessible and accurate. Its availability in both printed and electronic formats allows access by all types of users with a variety of needs. Individuals without access to the Internet will find the range of printed spreadsheets useful. If this database is widely used, the consistency of wilderness information will increase. Rather than building on outdated and inaccurate information, new wilderness data sets will be based on data that, as of 1998, were verifiably correct and consistent among agencies.

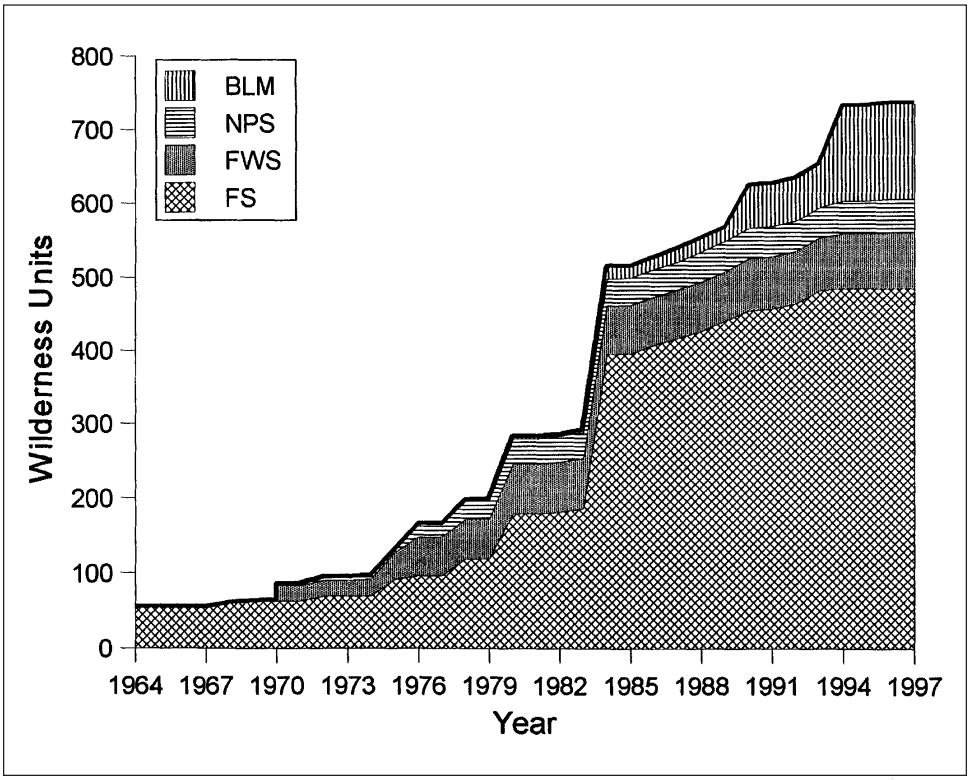


Figure 1—The cumulative yearly total number of wilderness units within the NWPS managed by the four federal agencies with wilderness responsibility. Data reported in this figure include additions to already designated units, and only lists years that acreage was added; years in which legislation only made name changes or acreage deletions are not included.

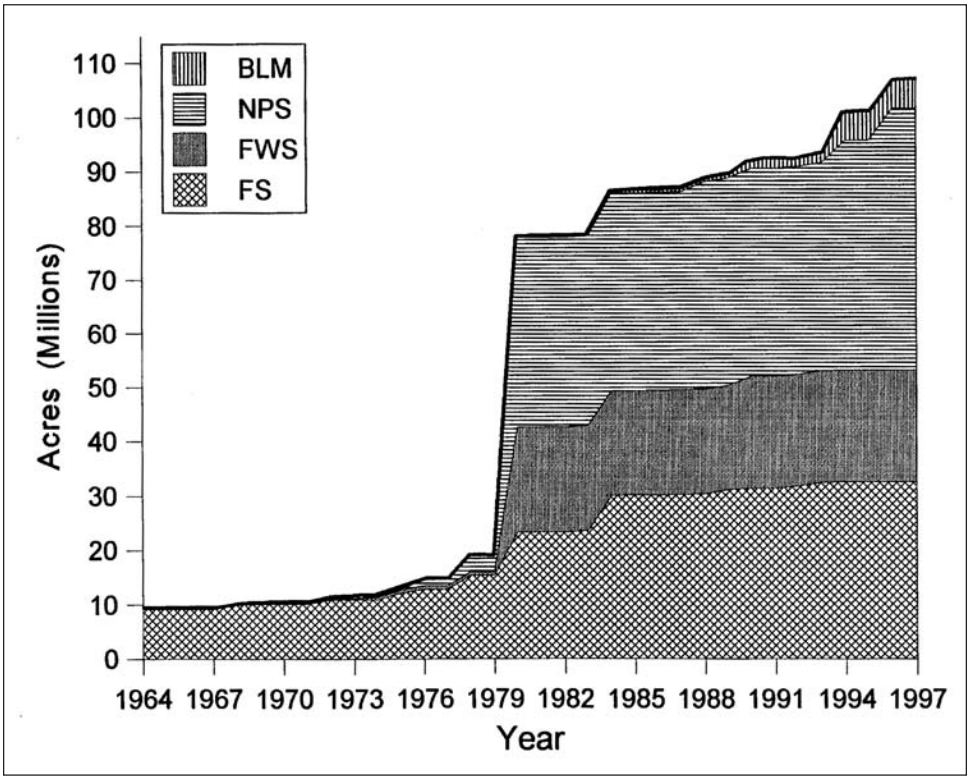


Figure 2—The cumulative yearly total number of acres within the NWPS managed by the four federal agencies with wilderness responsibility. Data reported in this figure do not include second agency acreage if that agency was not specified in that year's public law.

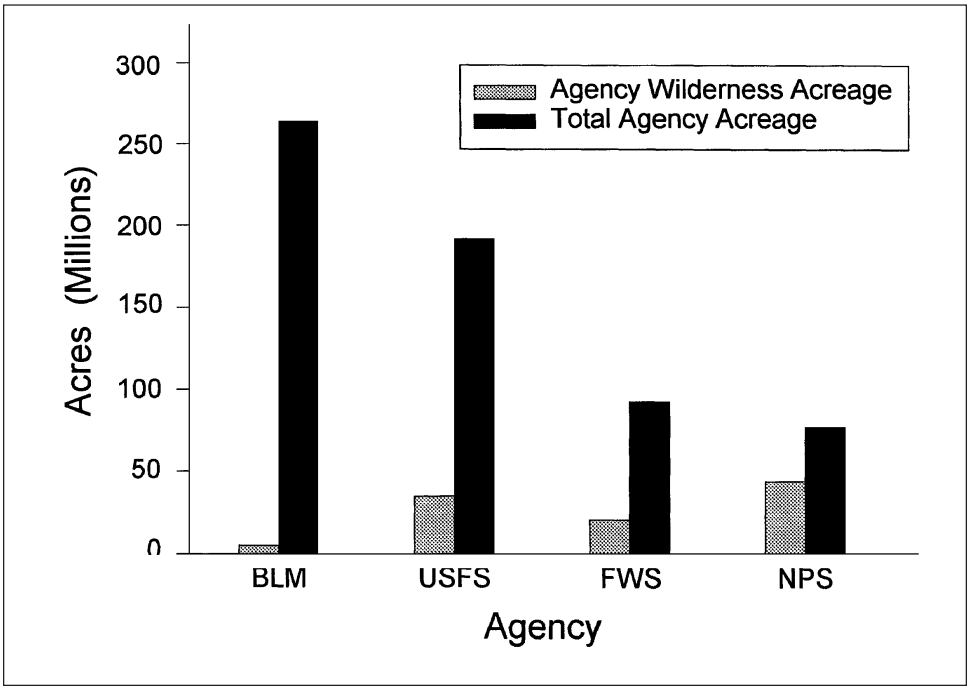


Figure 3—Comparison of each agency's current total wilderness acres with that agency's total land holdings.

Limitations of the NWPS Database

Because wilderness information is in a constant state of flux, the NWPS Database can only provide a snapshot of the NWPS as it stood in mid-1998. Since the passage of The Wilderness Act of 1964, 101 wilderness laws have been passed, each altering the wilderness system. On a continual basis new wilderness areas are created, names are changed, and boundaries are redrawn. An example illustrating the rate of change and need for updating is that since publication of the NWPS Database in October 1998, new wilderness has been established. The Opal Creek Wilderness in Oregon was established by Public Law 104-333 in 1996 under the stipulation that certain conditions take effect within two years' time. Two years later those conditions were met and this new wilderness officially became part of the system. The 20,724 acre Opal Creek Wilderness includes a 7,512 acre portion of the Bull of the Woods Wilderness and adds 13,212 new acres to the NWPS. The Internet database has been updated with this change, but a month after publication of the printed version the NWPS Database was out-of-date.

Future Needs

A static database will not be sufficient to meet the wilderness community's ongoing needs for accurate information. To be useful, NWPS information must not only be updated on a routine basis, it must also be accepted and shared between all four wilderness management agencies. Future uses and benefits of NWPS information depend on a database that is accurate, up-to-date, and comprehensive. Satisfying these three criteria will require interagency commitment to (1) develop shared database goals; (2) develop a set of core information that allows tracking the full set of trends in wilderness and wilderness management; (3) develop a standard database format and structure; and (4) provide the infrastructure of time, personnel, funding, and the formal reporting mechanisms, both within and among agencies, to develop and share this information.

Shared Goals

Only by discussing their common interests and needs will agencies develop a set of shared goals for NWPS information. In addition to their unique information needs, the agencies also share many information needs and reporting requirements, such as annual reporting to Congress as mandated by The Wilderness Act of 1964 (Sec. 7). Other shared goals include the need for accurate and comprehensive information to allow national-level administrators, policy-makers, and decision-makers to assess trends in wilderness conditions and the effectiveness of wilderness management. The need for systemwide, cross-jurisdictional information will only increase as socioeconomic pressures to develop unique wilderness and surrounding lands increase. In an era of declining budgets and personnel, interagency collaboration and cooperation will also, in the long run, streamline reporting efforts. Fortunately, the agencies are currently moving to discuss their common goals for NWPS information.

Wilderness Character and Management

Once shared goals are determined, the agencies need to decide what core information will be monitored on a regular basis. For a wilderness database to be useful, it must provide information on trends over time of the basic attributes of wilderness character and its management. Wilderness character includes both ecological and social conditions, while wilderness

management refers to the decisions and actions taken by the agencies to implement their wilderness legislative mandates.

A potentially significant impact of gathering core information is the increased pressure on already limited local budgets and personnel. Collecting and reporting information that primarily benefits national assessments and national policy-makers is expensive. The information derived from core variables must, to the fullest extent possible, be of direct benefit to the local wilderness. Landres (1994) discusses this and other tradeoffs of using standardized core variables in monitoring programs, such as the importance of sensitivity to local needs and concerns, and the need for carefully selecting variables that can be aggregated from the local to the national level without distortion. In addition, putting this information into a geographic information system will be increasingly important for inventorying and monitoring, management planning, policy setting, research, and consensual decision-making (Franklin 1994). Wilderness managers would benefit by having readily accessible information on a variety of ecological and social attributes to develop plans and assess the effectiveness of their decisions and actions. National-level administrators and policy-makers would benefit by being able to compile information on ecological and social trends in wilderness regionally and nationwide.

Standard Format

Once core variables are chosen, a shared format for compiling information is necessary to share and use this information within and across agencies. This format includes developing standard definitions, as well as standard methods for collecting and reporting information. If the information is not developed using shared, standardized definitions and methods, it may be of little or no use. For example, in an effort to comply with the annual reporting requirement stated in The Wilderness Act of 1964, the USFS, in 1993 adopted standard wilderness reporting requirements. However, no guidelines were published to accompany these reporting requirements, and agency personnel struggled to interpret what information they should report. With no guidance, different types of information were reported by different offices for a single type of requested information, resulting in confusion and a reluctance to spend the time and effort needed to report this information. These intra-agency problems will likely be compounded across agencies unless a shared format for compiling information is developed and used.

To be useful, NWPS information must not only be updated on a routine basis, it must also be accepted and shared between all four wilderness management agencies.

Administrative Infrastructure

Determination of shared goals, core variables, and formats are useless without an administrative infrastructure to support this effort. This infrastructure includes the commitment of personnel, time, and adequate funding. It also necessitates establishing formal communication mechanisms within and among agencies to develop, share, and use this information. The need for this type of institutional support has long been recognized in monitoring programs (e.g., see Lee 1993 and references therein). However, programs that provide long-term benefits are difficult to support on annual budget cycles, in agencies confronted with routine crises, and in agencies that do not recognize the need for monitoring information. For these reasons, formal mechanisms for using the information provided by these types of monitoring programs are needed to ensure their continued administrative support and the support of the people collecting the information.

Conclusions

With publication of the NWPS Database, there is an opportunity to build a new base of solid information. As the wilderness agencies move from issues of allocation to issues of management, information about the status and trends of wilderness character and its management becomes increasingly important. Developing a single, current, and comprehensive database for the NWPS will require the agencies to address future issues and needs and balance the benefits of a single NWPS database against unique agency needs, cultures, and attitudes of territoriality. **IJW**

SHANNON MEYER is a policy analyst at the Rocky Mountain Research Station's Aldo Leopold Wilderness Research Institute in Missoula, Montana, USA. Ms. Meyer holds an M.S. degree in environmental policy from the University of Montana, and a B.A. degree in environmental studies and government from Bowdoin College. She is active in developing policy frameworks for improving the management of wilderness. She can be reached at the Aldo Leopold Wilderness Research Institute, P.O. Box 8089, Missoula, Montana 59807, USA. E-mail: smeyer/rmrs_missoula@fs.fed.us.

PETER LANDRES is research ecologist at the Rocky Mountain Research Station's Aldo Leopold Wilderness Research Institute in Missoula, Montana. Dr. Landres holds a Ph.D. degree in ecology and biology from Utah State University, and a B.S. degree in natural science from Lewis and Clark College. He is active in developing the knowledge to improve the ecological management of wilderness.

REFERENCES

Browning, J. A., J. C. Hendee, and J. W. Roggenbuck. 1988. *103 Wilderness Laws: Milestones and Management Direction in Wilderness Legislation, 1964–1987*. Moscow, Idaho: Idaho Forest, Wildlife & Range Experiment.

Franklin, J. F. 1994. Developing information essential to policy, planning, and management decision-making: the promise of GIS. *In Remote Sensing and GIS in Ecosystem Management* ed. by V. A. Sample. Washington D.C.: Island Press: 18–24.

Landres, P. B. 1994. The role of ecological monitoring in managing wilderness. *Trends* 32: 10–13.

Landres, P., and S. Meyer. 1998. *National Wilderness Preservation System Database: Key Attributes and Trends, 1964 through 1998*. USDA Forest Service General Technical Report. Fort Collins, Colo.: RMRS-GTR-18, Rocky Mountain Research Station.

Landres, P. B., S. Marsh, L. Merigliano, D. Ritter, and A. Norman. 1998. Boundary effects on wilderness and other natural areas. In *Stewardship Across Boundaries,* ed. by R. L. Knight and P. B. Landres. Covelo, Calif.: Island Press: 117–139.

Lee, K. N. 1993. *Compass and Gyroscope: Integrating Science and Politics for the Environment.* Washington, D.C.: Island Press.

Reed, P. 1987. *National Wilderness Preservation System Database I, Unit Summaries.* Fort Collins, Colo.: Wilderness Research Foundation: 99p.

———1988. The National Wilderness Preservation System: the first 23 years and beyond. In *Wilderness Benchmark 1988: Proceedings of the National Wilderness Colloquium,* comp. by H. R. Frelich. General Technical Report SE-51. Asheville, N.C.: USDA. Forest Service, Southeastern Forest Experiment Station: 2–20.

Rosenberg, K. A. 1994. *Wilderness Preservation: A Reference Handbook*. Denver, Colo.: ABC-CLIO.

U.S. Board on Geographic Names. 1978. Decision Notice 7803. Reston, Va.: U.S. Geological Survey.

U.S. Public Law 88-577. The Wilderness Act of 1964. September 3, 1964. 78 Stat. 890.

U.S. Public Law 98-321. Wisconsin Wilderness Act of 1984. June 19, 1984. 98 Stat. 250.

U.S. Public Law 98-425. California Wilderness Act of 1984. September 28, 1984. 98 Stat. 1619.

U.S. Public Law 104-333. Omnibus Parks and Public Lands Management Act of 1996. November 12, 1996. 110 Stat. 4093.

U.S. Public Law 105-82. Act of November 13, 1997. 111 Stat. 1540.

Desert Wind and Dancing Bush: Stern Father & Lyrical Son

(Insights from a Wilderness Vision Quest)

BY ROBERT ELMORE

Desert Wind and Dancing Bush—such an unlikely pair.
One strong. One yielding.
One moving with a direct force.
One moving by bending and bouncing back.
One unpredictable—whispering, then shouting in the ear—
now from the north, now the east or west or south.
One connected to the earth, grounded,
small and doesn't stand out.
One makes other things flap and wave,
blows other things around.
One knows only itself, swaying gracefully alone,
in touch with its own body.

For the longest time, Dancing Bush didn't care much for Desert Wind—
too proud, too powerful, too demanding.
And Desert Wind didn't have a clue about Dancing Bush—
too lyrical, too sensitive, too easily pushed around.
They met each other day in and day out,
and moved on, just passing.

Desert Wind, being older, and the result
of far away climates and currents, couldn't change.
So Dancing Bush decided to change, just a little,
the next time that Desert Wind came huffing and puffing.
Instead of bending and yielding, as always,
Dancing Bush danced and sang,
playfully moved in all directions,
laughed with innocence,
and shook with delight.

Now the powerful and the lyrical
can be seen to dance together—
a graceful duo.
No longer an unlikely pair.

Experiencing Wilderness Management through the Eyes of Two Generations

BY WORTH STOKES

In this special feature, the 18-year-old daughter of a longtime U.S. Forest Service Wilderness Manager provides a youth's perspective on future management of wilderness.

—John C. Hendee

My Dear Worthy,

I hope your experience in "The Bob" and elsewhere this year will enhance your understanding and appreciation of the land and all that it encompasses. The land has been the driving passion of my life and the Bob Marshall Wilderness epitomizes the land in its most natural state, for it is almost as intact today as it was when European man arrived. With the return of the wolf in the last decade, the only missing components of the original ecosystem are the Native Americans and an occasional bison. I hope and believe this experience will serve you well throughout your life, regardless of the personal and professional paths you choose. I love and admire you more than words can express.

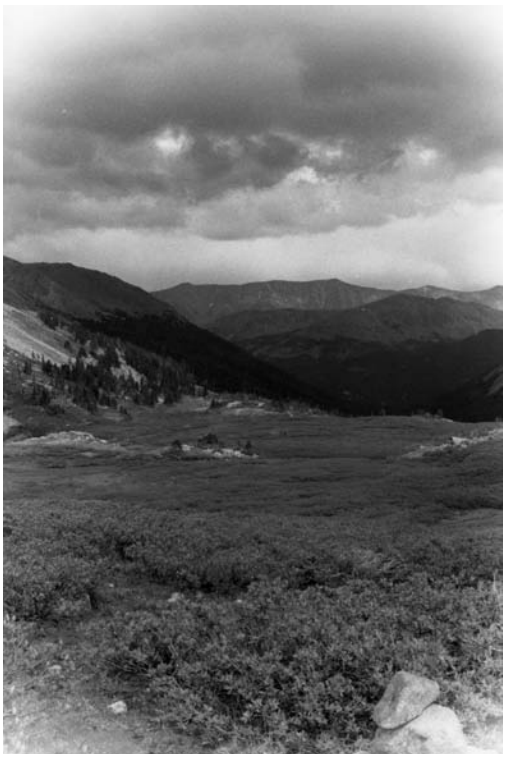
Love, Dad

I found the above message in the first few pages of a paperback copy of Leopold's *Sand County Almanac,* a gift discreetly hidden in the pocket of my new fleece pants I received via pack train shortly after my arrival in Montana. My dad's inscription touched me. I knew only that I had spent most of my life largely unaware of his interest and dedication to the environment and had been unable to comprehend the importance of, or responsibilities attached to, his job as assistant director for wilderness for the USFS. So when I decided during my senior year in high school to take time off before going to college, and Dad suggested I spend this time volunteering on wilderness trail crews, I jumped at the opportunity, thinking I might learn more about my dad, as well as wilderness and myself.

Article author, Worth Stokes, in the Bob Marshall Wilderness, Montana.

Montana 1998

Right after my high school graduation in June I flew from my home near Washington, D.C., to Montana to begin my great adventure under the "Big Sky." Montana is my birthplace and the country that captured Dad's heart early in his career as a wilderness manager. I had not been back since our family moved east when I was four years old, but my initial steps in Kalispell, Montana, felt so familiar that I found my eyes spilling over with tears. I was home.



Gooseberry Cabin, Bob Marshall Wilderness, Montana. Photo courtesy of Worth Stokes.

The next five months I worked on the Flathead National Forest, with the first three months spent stationed in the Middle Fork at Shafer Meadows and the last two in the South Fork at Big Prairie. At Shafer Meadows with the Great Bear Wilderness as my playground and teacher, the wilderness captured me, and its majesty took hold of my soul, just as that country had so tightly clutched at my father years before. I felt as though I was seeing my dad for the first time, and I found myself understanding him as I never had before. That summer was the first time I really experienced wilderness, and I felt blessed to finally know that it is this to which my father has dedicated much of his professional life. The brilliance of those sweet sunsets, the soft whispers of the wind in lodgepole pines, and the seemingly endless mountains made those long, exhausting days on the trail worth it. I watched Mother Nature speak to me with storm-caused movements rooted in ancient existence, realizing how very young I am and how many stories there are to be told. I was stunned to suddenly realize how very few people understand this magic from which we come, or how important it is that we not allow it to be destroyed.

The Continental Divide Trail, Colorado. Photo courtesy of Worth Stokes.

Arizona 1999

After a three-month trip home over the holidays, I went to the Coconino National Forest in Sedona, Arizona, where I volunteered on the wilderness crew. There my jobs included patrolling wilderness areas, contacting visitors, working with volunteer programs, and helping with several education projects at nearby schools and campgrounds. I was amazed by the number of people in the area. This was all very different from the space and solitude in the Bob Marshall Wilderness, but it introduced me to other challenges facing the wilderness system. The encroachments around the wildland—urban interface and overpopulated and overused wilderness areas were much more apparent in Sedona than in Montana. Much of Sedona's population is close to smaller wilderness areas, which makes those areas difficult to manage. While the large Bob Marshall Wilderness has its own managerial challenges, its size and remoteness often insulates it from other problems. In Sedona I found myself becoming frustrated with the people flooding these wild red-rock places, many of whom were ignorant of Leave No Trace (LNT) principles and guidelines and without a land ethic. I realized then that, while "The Bob" is ideal for wilderness work, the areas near Sedona really show us how imperative it is for those interested in preserving wilderness and the rest of the land to educate the unaware, for it is our only hope.

Colorado Summer 1999

My wilderness work near Sedona did not capture me as did my work in northern Montana, but it taught me a great deal about the challenges facing my generation of land managers—and it gave me enough time and experience to land a paid trail crew position with the USFS on the San Isabel National Forest in Colorado. There nearly all of my trail work was in the front country on multiuse trails with chain saws and other machinery. This was

my first exposure to trail work outside of wilderness, and I found myself dismayed and disgusted with the numerous assaults on the forest I saw along the trails I cleared and rebuilt with my crew. The roar of the chain saw stood in sharp contrast to the singsing song of a well-tuned crosscut saw. I grew tired of fixing trails washed out and rutted from motorbikes, ATVs, and mountain bikes. Compared to strict LNT practices and the serene grandeur of wilderness, the assaults on the front country recreational land were painful to experience.

This year has taught me a great deal about my father, my own identity, and how undeniable my ties are to wilderness, something I never expected to discover. I learned the ways of its beating heart and how similar they are to my own, and I am deeply concerned about its vulnerability.

Who Will Save Future Wilderness?

But I am afraid. After experiencing these pieces of wilderness and working with so many people my own age, all the while talking with my father and those much older, I see a great gap between my generation and his in the understanding and appreciation of our wilderness system. Dad's generation of wilderness professionals had to fight for the very birth of our current wilderness preservation system, but these same people are on the brink of retirement and will take with them firsthand knowledge of the evolution of our wilderness system and much of the passion that made it possible.

So my appeal is to my peers. I believe that the only solution is extensive education and communication, both in and out of the classroom. Land ethics cannot be taught—instead they must be a process of exposure and self-identification. Direct contact is the best way with which to teach the importance of wilderness and its relationship to our society and ourselves. Children and adolescents must be placed in these sacred spots and their senses assaulted with the wonder of that which so many have spent their lives fighting for, so that they can no longer ignore its greatness. Only then will we cultivate the next generation of warriors with the hearts so necessary for this battle, and only then will they be willing to listen to the past for guidance.

I do not intend to sound as though I have the answers—I want only to state that my own experience in wilderness has been a priceless education and played a great role in defining who I am as a young adult. To those who have dedicated themselves to the existence of wilderness, I give my most heartfelt thanks and gratitude. To my father, without whom this journey would not have been possible, I can say only that part of my heart now lies with his, somewhere in the wild, unforgiving terrain of the "The Bob." **IJW**

Dad's generation of wilderness professionals had to fight for the very birth of our current wilderness preservation system, but these same people are on the brink of retirement and will take with them firsthand knowledge of the evolution of our wilderness system and much of the passion that made it possible.

WORTH STOKES is currently attending Mary Washington College in Fredericksburg, Virginia, but is planning to move to a western university to pursue a double major in environmental studies and photojournalism. E-mail: mworthystokes@yahoo.com.

Petroglyphs in Sedona, Arizona. Photo courtesy of Worth Stokes.

Arizona Canyon, Secret Canyon Wilderness, Parson's Spring Trail. Photo courtesy of Worth Stokes.

How Big Is the Risk in Wilderness Treatment of Adolescents?

BY ROB COOLEY

Abstract: Incident rates for four wilderness treatment programs compared to rates for other activities indicate that the injury risk of wilderness treatment is as follows: about on a par with cross-country skiing; a little safer than canoeing; somewhat less risky than going on a summer adventure camp for adolescents; half as risky as overnight backpacking in general; considerably safer than downhill skiing; about 18 times less likely to result in injury than are high school football practices and cheerleading; and less than half as risky for fatal accidents as motor vehicles are for 15 to 19 year olds.

In the last 15 years wilderness treatment programs have emerged to treat adolescents troubled by drug abuse, emotional afflictions such as depression, and behavioral problems. Wilderness treatment appears to have special healing properties for young people, who are active, adventurous, and open to the beauty and meaning of outdoor settings. However, because their clients are young and troubled, the treatment programs incur a special degree of responsibility for keeping them as safe as possible.

Accurate risk assessment data is a key to weighing the risks of wilderness treatment against the risks young people incur in other settings, and in recognizing risk issues and situations so that risk management can be continually improved. It may also help to overcome adverse publicity about several rare but tragic and highly publicized incidents that are not characteristic of outdoor treatment. Parents, referral sources, public land agencies, and insurers all have legitimate concerns about risk levels in the growing wilderness treatment industry.

There is always some risk in any outdoor program, and no guarantees of complete safety can be made by any responsible program. But there is also risk in any residential program, in school, in sports, and for that matter, in just getting through the teen years.

Risk Incidence in the Wilderness Treatment Industry

It is surprisingly difficult to gather reliable statistics about accident and illness rates outside the workplace and off the highways. However, my research was helped by many people who took the time to send information and assist me in analyzing it. I am particularly indebted to the National Outdoor Leadership School (NOLS) and to Outward Bound, who have had the foresight to gather increasingly careful incident reports for many years, and the courage to publish them in the hope that this would improve outdoor safety for all programs. Most important, four of the founding members of the Outdoor Behavioral Healthcare Industry Council (OBHIC) shared their figures for 1998 (Anazazi, Aspen, Red Cliff Ascent, and Catherine Freer) to provide multiprogram accident rates with enough clients to make the figures both reliable and representative.

The accident and illness rates are expressed as incident rates per 1,000 person days in the outdoors, the standard used by NOLS and Outward Bound. Converting data from other sources into person days proved to be difficult, requiring judgments such as how many hours of football practice are equivalent to a 24-hour day of outdoor living and activities (I chose 12 hours) and how many hours a day a teenager spends in a car (I estimated two hours, but

the figure is probably lower, which would mean automobiles are even more dangerous to adolescents than my figures indicate).

The OBHIC injury rate for clients in 1998 was 1.12 injuries per 1,000 client days (see Table 1); the illness rate was 0.73, and the evacuation from the field rate was 1.17. The rates for staff were similar for injury, but somewhat less for illness and evacuation. For OBHIC, as for NOLS, injuries and illnesses were only counted if they interrupted a client's program for 12 hours or more, and OBHIC members also counted their evacuations only when a client was taken out of the field for 12 hours or more.

These data mean that, if one child were to spend 1,000 straight days in the field with an OBHIC program, a little less than three years, he or she could expect to be injured a little more than once, be ill enough to have to skip daily activities for a full day a little less than once, and would be taken to a doctor's office or hospital for treatment of an injury or illness a little more than once. From a program perspective, a 50-day program with seven adolescents per group could expect to have about one injury, one illness, and one evacuation every third 50-day outing.

Wilderness Treatment Compared to NOLS and Outward Bound

To judge how well the OBHIC programs are managing their risks, the most meaningful comparisons are with other wilderness programs. The best statistics are from NOLS, an extremely competent wilderness education/outdoor adventure program. NOLS, for the four years 1995 to 1998 (see Table 1), had about 550,000 participant days with an injury rate of 1.29, an illness rate of 0.92, and an evacuation rate of 1.36 (Leemon 1999). These rates are all down substantially from

Table 1—Injury rates per 1000 participant days and fatality rates per 1,000,000 participant days in wilderness treatment and selected outdoor and adolescent activity.

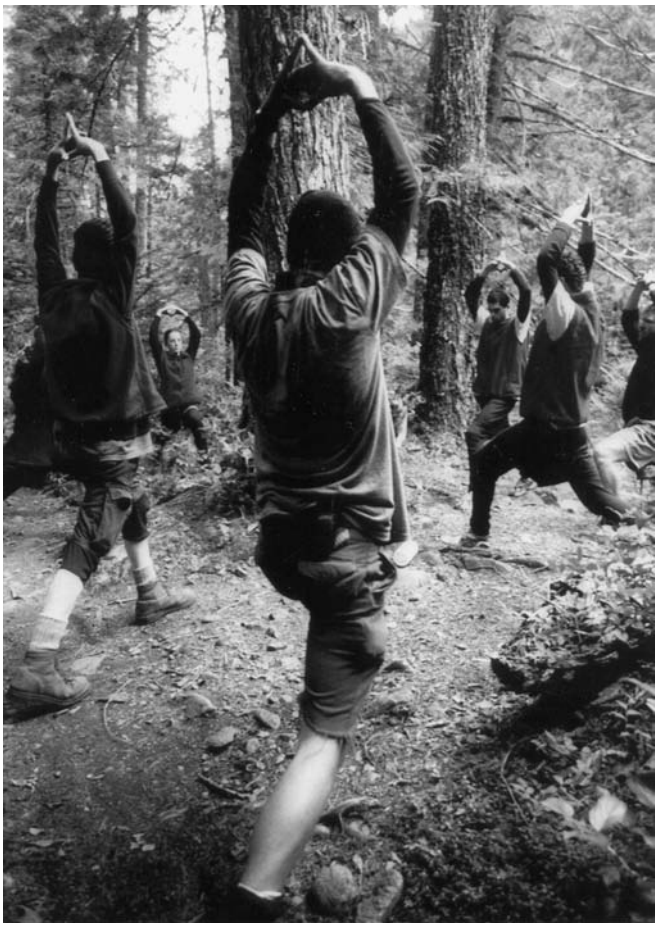
Activity	Injury/1000 partic. days	Fatality/million partic. days
OBHIC, wilderness treatment programs for adolescents	1.12	1–2 estimated
NOLS, wilderness ed. field progs. 1995–1998 (Leemon 1999)	1.29 (1)	1.8
NOLS, 1984–1994 (Schimelpfenig 1994)	1.99 (2)	
Adventure program: backpacking: 6 hrs., 18 hrs. in camp (Leemon 1998)	2.05	
Adventure program: cross-country skiing (Liddle and Storck 1995)	0.91	
Adventure program: climbing (mountain, rock and wall) (Leemon 1998)	1.86	
Adventure program: canoeing (Leemon 1998)	1.54	
Adventure program: downhill skiing (Liddle and Storck 1995)	3.28	
High school football practice (Zemper 1998)	19.74	
High school football, games (Mueller and Cantu 1998)	35.00	0.63 (3)
Alpine backcountry skiing (Colo. Dept. of Public Health & Environment 1998)		1.5
Commercial whitewater rafting (Univ. of Colo. Business Res. Division 1998)		1.8
White adolescents 15–19, all accidental causes (Nat. Ctr. for Injury Prevention and Control 1999b)		1.5
Adolescent drivers and occupants, age 15–19 (Nat. Ctr. for Injury Prevention and Control 1999a)		4.5

(1) Plus illness rate of .92/1000 partic. days. Evacuation rate 1.36/1000 partic. days.
(2) Plus illness rate of 1.39/1000 partic. days. Evacuation rate 1.57/1000 partic. days.
(3) Plus .63 permanently disabling injuries, mostly paralysis.

There is always some risk in any outdoor program, and no guarantees of complete safety can be made by any responsible program.

the 1984 to 1994 rates, which were injury 1.99, illness 1.39, and evacuation 1.57 (Schimelpfenig 1996). The NOLS data includes both staff and clients, so the client rates alone are a probably a little higher, since NOLS staff are all experienced and competent.

In each category, NOLS's data for its last four years are a little higher than OBHIC's. One would expect outdoor adventure programs to have higher rates than do OBHIC members, since these programs deliberately engage in adventurous and physically demanding activities such as long and difficult hikes, climbing, whitewater rafting, and swimming, whereas most OBHIC programs confine themselves to fairly easy backpacking. Also, staff ratios at OBHIC programs are about three clients per staff member, while rates of five or six clients per staff are standard and appropriate for adventure programs. Cooking and food sharing, the most common sources of illness in outdoor programs, are more staff-supervised in OBHIC programs. On the other hand, OBHIC clients are more likely to arrive at a program with significant illnesses, are often very out of shape physically, and thus more injury prone, and do not always carefully follow safety instructions. Allowing for these differences, the incident rates at NOLS and OBHIC wilderness treatment programs seem roughly comparable. Thus, since NOLS is commonly regarded as representing a national standard for competence in outdoor programming, the OBHIC programs would seem to be doing a competent job of managing their risks and taking care of their young clients.



Prehike stretching is fun for teen groups, and it reduces the risk of muscle injury. Photo courtesy of Kurt Jensen.

NOLS data also show that 75% of their injuries are "athletic," primarily strains and sprains, or soft tissue; only 7% involved what one might think of as "serious" injuries, such as dislocations, fractures, and head injuries. Falls, slips, and overuse caused 54% of NOLS injuries. Flu, diarrhea, and infection constituted 59% of the illnesses. OBHIC data are similar.

Outward Bound counts incidents differently than NOLS and OBHIC: A person unable to participate in program activity the day following the incident is its standard criterion (Outward Bound 1998). This results in lower incident figures, since most reported incidents are minor, and many youngsters recover by the day after an incident. The five main Outward Bound wilderness programs show student injury rates in 1998 ranging from 0.34 to 1.70 per 1,000 student days, and illness rates ranging from 0.27 to 1.30. Like NOLS, Outward Bound shows a significant steady decrease in injury rates since it started collecting incident figures in 1981, while illness rates have decreased only slightly.

Wilderness Treatment Compared to School Sports

High school sports programs are beginning to collect fairly reliable injury data, and the National College Athletic Association (NCAA) has been collecting data on college programs for many years. These reports express injury rates per sporting event (a practice or a game being one event) or per 100,000 participants per sports season. I assumed that practices average two hours, and that 12 hours of practice is equivalent to a 24-hour outdoor treatment person day. Data from Eric Zemper (1998) suggests that high school football players average 66.603 "exposures" (one practice or one game is one exposure) per year. This computes to 11.1 twelve-hour days per player per season.

Zemper recorded an injury when it resulted in at least one missed day of practice or game; the median missed days in his sample was four per recorded injury. The injury rate for high school football practices (Zemper 1998) is about 19.74 injuries per 1,000 twelve-hour days, almost 18 times the injury rate for OBHIC programs. High school football games produce a higher rate, 35 per 1,000 athlete 12-hour days. NCAA college football rates are even higher, especially for games (NCAA 1997). Zemper's data also show that 22% of the high school injuries involve concussion, dislocation, or fracture. NOLS shows 7% in those more serious categories. Four percent of high school football injuries required surgery.

High school girls' gymnastics appears, by inference from the data available, to produce injury rates that are similar to high school football, with a permanently disabling injury rate twice that of football. Cheerleading, which has come to incorporate many features of gymnastics, appears to have very high injury rates. (Mueller and Cantu 1998).

Deaths and Disabling Injuries

The negative media coverage of outdoor treatment programs has focused on three deaths in three relatively young outdoor treatment programs, all three of which shared certain attitudes toward managing adolescent behavior and outdoor program management. However, none of the four OBHIC programs has had a client death, though all have been in business for about 10 years. The lesson here is that one should be careful in selecting an outdoor treatment program, paying attention to safety records and what kind of people are running those programs. Parents and referral sources are urged to check program licenses, certification, association memberships, staff credentials, and parent and referral source references.

NOLS again provides a baseline for fatalities with its data and reputation for competence. While NOLS had several deaths during its early years, it had only two in the 10 years from 1984 to 1994, and during that time it had something over one million participant days (Schimelpfenig 1996). NOLS had one death from 1995 to 1998, out of about 550,000 participant days (Leemon 1999), a rate of 1.8 deaths per million participant days. The rate for the 15-year period is 0.002 deaths per 1,000 participant days, or approximately two deaths per million participant days.

Stream crossings are challenging and are one of the risks associated with wilderness backpacking. Photo courtesy of Dave Briggs.

The four reporting OBHIC programs had 46,000 client days in 1998, and another 24,000 field staff outdoor days. If the relative incidence of injury (slightly higher for NOLS than for OBHIC) is the same as the relative incidence of fatalities, then OBHIC members might reasonably expect that, despite their best efforts, one of their clients would suffer a fatal injury or illness every 11 years or so at their current participation levels.

Risks of Death in Other Activities

How does the risk of outdoor treatment compare with other risks adolescents may incur? High school football has had a 15-year fatality rate of 0.7 deaths per 100,000 players per year, plus the same rate of permanently disabling injuries (Mueller and Cantu 1998). Making some assumptions about hours played per season and drawing on data from Zemper (1998), this gives a rate of 0.00063 deaths per 1,000 player 12-hour "days," or about 0.63 deaths per million twelve-hour days, and another 0.63 permanently disabling injuries, mostly paralysis. This fatality rate is about one-third that of NOLS and commercial rafting. If the permanently disabling injuries, which are apparently very rare in outdoor activities, are added in, then high school football has a catastrophic injury/fatality rate about two-thirds that of outdoor programs and guided

How does the risk of outdoor treatment compare with other risks adolescents may incur?

whitewater rafting. The reported rate of permanently disabling injury for high school girls' gymnastics is twice that of football (Mueller and Cantu 1998).

Catastrophic Injuries Have Fallen

It is worth noting that, in the 15 years that high school football catastrophic injury statistics have been collected, the number of fatalities has dropped substantially. From 1982 to 1989, 41 players died from direct injuries; in the seven years 1990 to 1997, only 12 died from direct injuries. Mueller and Cantu (1998) attribute this to changes in rules and more skilled trainers and medical assistance—changes made in response to the data on injury causes. Fatalities due to causes other than direct injuries (mostly heart failure and heat injury) have stayed the same: 37 from 1982 to 1989 and 44 from 1990 to 1997.

It would be interesting to compare injury, illness, and death rates for indoor residential adolescent treatment programs, but apparently no one—not the states, not the professional associations, not the accrediting bodies—collects such figures. (Weiss and Altimari 1998). But residential treatment program deaths (an estimated 50 per year caused by restraint) are known to be substantial (Weiss 1998), and rates may be higher than those for outdoor programs.

Cars and Teenagers

Adolescent motor vehicle fatalities are well documented. For 15 to 19 year olds, the fatality rate in 1997 was 27.42 per 100,000 population (National Center for Injury Prevention and Control 1999a). Assuming that adolescents spend two hours per day driving or riding in vehicles, this converts to 0.0045 per 1,000 adolescent 12-hour days of motor vehicle time, or 4.50 deaths per million adolescent vehicle days. This is more than twice the fatality rate for NOLS, and it includes all adolescent vehicle occupants, regardless of who is driving. Adolescents in cars being driven by other teenagers, or in cars after dark, or when alcohol or drugs are involved, are at much higher risk (National Center for Injury Prevention and Control 1999b). Considering that the young people who participate in OBHIC programs are usually more or less out of their parents' control at home, spend most of their time with peers, and often use drugs and go to nighttime parties, it seems clear that their risk of dying in a car wreck is many times higher than their risk of death in an outdoor treatment program.

Risks at Home

A final comparison may be the risk of sending a child to a wilderness program compared with keeping him or her at home. The overall injury fatality rate for white 15 to 19 year olds is 54.4 per 100,000 population per year, which translates to 0.0015 per 1,000 days, or about 1.5 deaths in 1 million days (National Center for Injury Prevention and Control 1999a). This means that if you have an average adolescent living in your home, their risk of having a fatal accident is about three-fourths what it would be if they were in a NOLS program or, as well as we can estimate, an OBHIC wilderness treatment program. For a troubled teenager, incurring many additional risk factors, the chances of serious injury or death while living at home would seem to be much higher than while participating in a treatment program.

Conclusion

Here is a "real-time summary" of risk for a state of known population based on the foregoing data. A state with a population of about 8 million would have about 100,000 high school football players. In one football season, those football players would experience just less than one death and one disabling injury (0.7 of each). Each player would have about 130 hours of active involvement in practices and games during that season. If, after the season, all 100,000 of them went on an eight-day NOLS course, during which they would each have about the same 130 hours of non-sleeping risk exposure, about twice as many but less than two of them (1.6) could be expected to have a fatal injury. (In fact, it would take NOLS six years to produce that many participant days at their current rates of participation). During the three-month football season, the players might be expected to spend 100 to 200 hours each in cars, and about eight of them would die in auto wrecks. During the same period, about seven more would die from injuries of other kinds, for a total of 15 deaths.

There is no way we can keep our teenage children completely safe from injury and death. If we want to keep them as safe as possible we should certainly not let them drive, or even get into a motor vehicle. But we don't

aim for the impossible goal of complete safety. Instead, we intuitively calculate levels of risk for activities that balance our fears against our perceptions of the value or the necessity of those activities, and we develop a "risk acceptance" level for each activity. Gerald Wilde (1994), a professor specializing in risk analysis, argues that humans appear to be excellent intuitive calculators of risk, and that we do a pretty good job of it as long as we have enough accurate data as a basis for our judgments.

I hope this article will serve the purpose of extending and clarifying the relevant database for all of us who work in the outdoor treatment field, and for those parents who entrust their adolescent children to us for the growth and healing that outdoor adventure and treatment can provide. **IJW**

ROB COOLEY earned a Ph.D. in counseling psychology from the University of Oregon in 1979. Since then he has specialized in family and adolescent therapy at Oregon's Children's Services Division and in private practice, while taking summers off to run a whitewater rafting outfit. In 1988, he combined his outdoor and therapy interests in founding Catherine Freer Wilderness Therapy Expeditions. Contact the author at P.O. Box 1064, Albany, Oregon 97321, USA. Telephone: (541) 926-7252. E-mail: info@cfreer.com. Website: www.cfreer.com.

REFERENCES

Leemon, Drew. 1999. Injury, illness and near miss profiles: a review of leading types and causes of incidents on NOLS courses in 1995–98. In *Wilderness Risk Management 1999*. Lander, Wyo.: The National Outdoor Leadership School.

Mueller, Frederick O., and Robert C. Cantu. 1998. Fifteenth annual report: fall 1982–spring 1997. Unpublished manuscript. University of North Carolina, Chapel Hill, N.C.: National Center for Catastrophic Sports Injury Research.

National Center for Injury Prevention and Control. 1999a. Teenage motor vehicle deaths. Available online: www.cdc.gov/ncipc/duip/teenmvh.htm.

National Center for Injury Prevention and Control. 1999b. Facts on adolescent injury. Available online: www.cdc.gov/ncipc/duip/adoles.htm.

NCAA 1997 Injury Surveillance System 1995–96. Available from Randall W. Dick, Sports Sciences, NCAA, 6201 College Boulevard, Overland Park, Kansas, 66211, USA.

Outward Bound. 1998. USA safety summary 1998, appendix C. *Outward Bound, National Safety Report Review of 1998 Operations*. Available from Lewis Glenn, vice president of safety and programs, Outward Bound, 100 Mystery Point Road, Garrison, N.Y. 10524, USA.

Schimelpfenig, Tod. 1996. A look at ten years of NOLS field safety statistics. *NOLS Newsletter* (March 1996). Lander, Wyo. National Outdoor Leadership School.

Weiss, Eric M. 1998. Deadly restraint: a nationwide pattern of death. Hartford, Conn.: *Hartford Courant* (October 11, 1998).

Weiss, Eric M., and Dave Altimari. 1998. Deadly restraint: patients suffer in a system without oversight. Hartford, Conn.: *Hartford Courant,* (October 13, 1998).

Wilde, Gerald J.S. 1994. Target Risk: *Dealing with the Danger of Death, Disease and Damage in Everyday Situations*. Toronto: PDE Publications.

Zemper, Eric. 1998. Athletic injury monitoring system, high school football, 1997.

Unpublished manuscript. Eugene, Oregon: Exercise Research Associates of Oregon.

Homeland
by Sarah Johnson

The window clouds until
all I see is horizon
somewhere, and all the hills
strain against the white walls of noon,
and breasts and insects darting between
fold into tight shadows.
These folds are my eyelids,
these fingers are darts.
The giant that looms with a roar
is just wind, just sand—
rears up from a creosote bush
as I fall,
and where I toppled shall spring forth
lizards, greased with desert milk,
fat on rich shade.

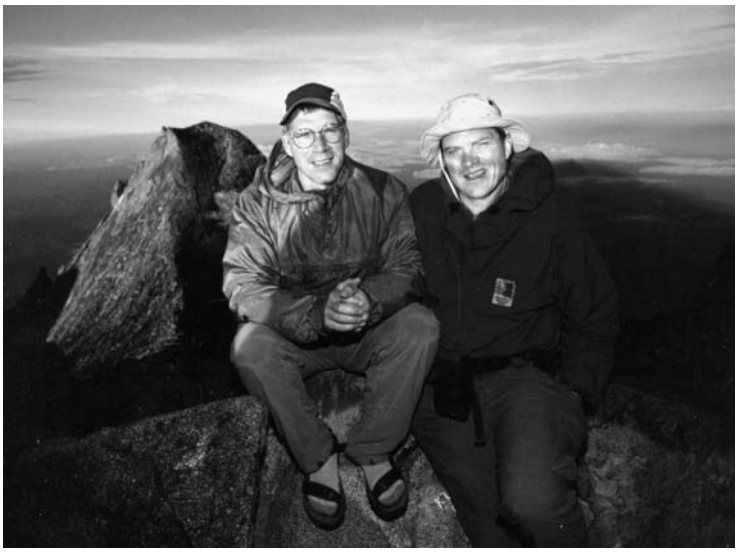
The *Russian Chronicles of Nature (Letopis prirody)*

Is This a Model for a Chronicle of Wilderness?

BY DAVID OSTERGREN AND STEVE HOLLENHORST

Abstract: The Russian system of *zapovedniki* (strict nature preserves) was established in 1919 primarily to preserve typical and unique ecosystems and conduct baseline field research. We review a management tool on *zapovedniki* called the *Letopis prirody* or *Chronicles of Nature*–an annual document of significant information and research. Research on North American wilderness information is conducted by a wide range of universities, federal agencies, and nonprofit organizations and is disseminated through conferences, refereed journals, and various publications. However, wilderness areas lack a centralized comprehensive archival database. We suggest that one step toward such a database may follow the Russian model and be an annual document called the "Wilderness Chronicles."

The Russian system of *zapovedniki* (strict nature preserves) was established in 1919 primarily to protect areas of scientific interest. By the mid-1930s, *zapovedniki* were defined as areas that exclude virtually all anthropogenic disturbances, including wildlife management, species introduction, extractive resource use (industrial or personal), and recreational activities such as hiking and hunting. Their primary purpose was to preserve typical and unique ecosystems throughout the United Soviet Socialist Republic (USSR) and conduct baseline field research in ecology, geology, botany, and zoology. This definition has persevered through seven decades of Soviet rule and dominates the management goals of Russian *zapovedniki* in the 1990s (Colewell et al. 1997; Weiner 1999). In 1995 additional goals were added to include environmental education (which may include limited ecotourism), assisting in environmental impact assessments and training conservation personnel (Federal law … 1995). With the economic and social turmoil in Russia, *zapovednik* directors have augmented traditional management tools with new strategies and funding mechanisms (Ostergren 1998).



Article authors (l to r) Steve Hollenhorst and David Ostergren.

A traditional management tool retained on all *zapovedniki* is the *Letopis prirody* or *Chronicles of Nature* (Shvarts and Volkov 1996). *The Chronicles of Nature* is an annual document of all activities and significant events on a *zapovednik* throughout the year. In sharp contrast, wilderness information and scientific reporting in the United States is conducted by a wide-ranging cadre of scholars, scientists, and managers working for universities, colleges, the U.S. Forest Service (USFS), the National Park Service(NPS), the Bureau of Land Management (BLM), the Fish and Wildlife

Service (FWS), nonprofit groups, and environmental advocacy organizations. Outlets for these works include conferences, books, refereed journals, internal documents, popular literature, gray literature, memorandum, and publications for public information. However, individual wilderness areas lack a centralized comprehensive archival database. One step toward such a database may be modeled on the *Russian Chronicles of Nature*.

We propose an annual document for each wilderness area called the "Wilderness Chronicles." Many attributes of wilderness areas are already described in agency publications. However, a Wilderness Chronicle would provide an updated record that is searchable and accessible for managers and researchers alike. Standardized titles, chapters, search terms, dates, and formats would enhance and ameliorate decision-making within and across land management agencies. This article discusses a rationale for adoption of such a documentation system for the U.S. National Wilderness Preservation System (NWPS).

History and Background

In 1848 the Russian Geographic Society (Society) began the first systematic long-term methodology to observe nature in Russia (Filonov and Nukhimovskaya 1985). The Society sought to establish connections with a broad range of scientists and solicited observations across disciplines. This collection of natural phenomena was the earliest systematic program to be applied across several regions. Phenology drove much of the early interest in record keeping, with early observations focusing on migration patterns for birds and reindeer, vegetative flowering events, and seasonal precipitation. In 1895 the soil scientist V. V. Dokuchaev suggested a system of research stations in the Black Earth region of southern Russia and Ukraine. The intention was that these stations would conduct research and maintain continuous records of conditions on undisturbed steppe (Filonov and Nukhimovskaya 1985).

The concept of collecting standardized data from preserves was formally developed by naturalists V. N. Sukachev (c. 1914) and G. A. Kozhevnikov (c. 1928) (Shvarts and Volkov 1996). An early influence in Russian nature preservation, G. A. Kozhevnikov, proposed that the planning horizon for *zapovedniki* "should be … over 100–200 years or across centuries … to grasp some knowledge from a great process—evolution" (1928, p. 14). He suggested that such long-term research required a systematic standardized method of record keeping. The information should be collected by an interdisciplinary team mapping and documenting the animate and inanimate characteristics of each protected area. He argued that even small plots of land with detailed information may reveal clues to large-scale changes in vegetation, climate, species composition, or productivity (Kozhevnikov 1928).

The term "Chronicle of Nature" was suggested in 1937 by A. N. Formozov (Filonov and Nukhimovskaya 1985), and by 1940 a standardized format was developed for the entire system (over 120 preserves throughout the Soviet Union in 1985). The format has been modified several times to fit the needs of research and the evolving role of the chronicle in management. The most recent revision was by K. P. Filinov and U. D. Nukhimovskaya in 1985 (Shvarts and Volkov 1996). The format (still in use in 1999) standardizes where a particular subject or field will be placed within the chronicle (see Table 1). For instance, data on elk (*Cervus* spp.) population is in chapter 8, and current research on elk is in chapter 11.

A U.S. Wilderness Chronicle modeled after the Russian *Chronicles of Nature* might be modified to reflect the nuances of American environmental law, policy, and science.

Each *zapovednik* is divided into several departments—administration, enforcement, maintenance, and research. Research proposals are initiated by individual scientists within the *zapovednik* or an affiliated university and then reviewed by a national committee for consistency with system-wide goals. However, the committee does not dictate specific projects to fulfill a nationwide strategy. The scientific method guides research, the *Chronicles of Nature* report the results in a systematic fashion (Stakheev 1995). Fundamental to the success and usefulness of the chronicles is that they include information on activities from both management and research.

A. E. Volkov (1990) recommended that researchers conduct meta-analysis of past chronicles to detect regional or large-scale trends. He provided a brief example by comparing data across 26 *zapovedniki* with respect to ornithology, mammalogy, ichthyology, and herpetology. For the English-speaking community, a collaborative effort from the

Stolby Zapovednik—the unique pillars of stone (granite) that inspired preservation of the area crop up through the *taiga* (boreal forest). Photo courtesy of David Ostergren.

Department of Zapovednik Management and the Biodiversity Conservation Center produced a compilation of 1991–1992 data from 85 *zapovedniki* in Russia (Volkov 1996). Investigators may use this resource to search for specific species or to develop comparative research projects.

Stolby Zapovednik—flowers across a hillside in a meadow. Photo courtesy of David Ostergren.

Each preserve is expected to keep one copy of the chronicle at the *zapovednik*, while another copy is sent to the main office in Moscow. The Department of Zapovednik Management of the State Nature Protection Committee has chronicles from the last five years from many *zapovedniki*. Unfortunately, most *Chronicles of Nature* are buried in the Russian government archives. The archival resources are not easy to access, and information must be painstakingly gathered by inspecting each volume.

Since the fall of the Soviet Union funding shortages have reduced the quantity (not quality) of research projects. Another problem is funding publication of the annual *Chronicle of Nature*. In general, the older established *zapovedniki* have made it a priority to maintain the tradition of publishing the annual chronicle. Newer *zapovedniki* have been constrained to an initial report providing the scientific justification for creating the preserve. These initial chronicles include broad descriptions of the area, species, and geological characteristics as well as general assessments of floral and faunal populations. Unfortunately, the newer *zapovedniki* often lack the resources to continue an adequate amount of research, much less publish the chronicle.

The Russian *Chronicle of Nature* is a potential wealth of information for protected area managers and researchers from many disciplines. With monitoring and ecological reports on several preserves dating back to the 1920s and 1930s, the chronicles offer long-term ecological data (Shvarts and Volkov 1996). In light of current economic conditions in Russia, the international community may consider supporting an inventory of past volumes and publication of current information. A promising project still searching for adequate funding is the World Conservation Union's (IUCN) Protected Area Resource Centre (PARC). Its mission is to strengthen the capacity of protected area networks for information flow and networked communication and to provide a single distributed and coherent source of protected area information resources and services. A small contingent within PARC is searching for support to document and access the archived *Chronicles of Nature*. Despite some problems with access, the *Chronicle of Nature* offers an excellent model to document information from protected areas throughout the world.

The *Chronicles of Nature* Model Applied in the United States

Wilderness in the United States has evolved over eight decades of debate, refinement, and expansion to include 157 of the nation's 261 ecosystems (Davis 1988). In the 1920s wild areas benefited from administrative designation by the USFS and the NPS. The administrative protection was deemed inadequate by a few visionaries who pushed for a congressionally mandated NWPS. Finally passed and signed into law in 1964, this legislative system now encompasses over 104 million acres. In addition to the USFS and NPS, the FWS and BLM also administer wilderness areas. The NWPS is unified by the primary function to

preserve areas that "generally appear to have been affected primarily by the forces of nature … [and have] outstanding opportunities for solitude or a primitive and unconfined type of recreation … or other features of scientific, educational, scenic or historical value" (Public Law 88-577). However, because wilderness is managed by four different agencies with diverse units located from Florida to Alaska, each area is unique and may be characterized by size, topography, habitat, primary recreation activities, traditional use, visitor numbers, and role in a larger ecosystem.

As we enter the 21st century and an era of ecosystem-based management, more organizations and politicians are calling for a scientific basis for decision-making. For instance, the National Forest Management Act of 1976 requires using the latest scientific methodology, and the Vision 2020 National Parks

Table 1—Standardized outline for the Russian *Chronicles of Nature,* and suggested additions appropriate for a U.S. *Wilderness Chronicle.*

Standardized Elements of the Chronicles of Nature
1. Territory of the Zapovednik
2. Sample and inventory areas, key places, permanent and temporary routes.
3. Topography
4. Soil characteristics
5. Weather
5.1 Meteorological data by season
6. Water quality
7. Flora and Vegetation
7.1 Changes in flora
7.2 Changes in vegetation
7.2.1 Seasonal dynamics
7.2.2 Fluctuations in vegetative community
7.2.3 Succession changes
7.2.4 Unusual influences on the vegetation
8. Fauna and Animal Populations
8.1 Species composition
8.1.1 New species (vertebrate and invertebrate)
8.1.2 Rare Species
8.2 Number of individuals by species
8.3 Ecological survey of each species
9. Calendar of Nature
10. Condition of the zapovednik regime. Influence of anthropogenic factors on the natural conditions in the zapovednik and protection zones.
10.1 Partial use of the natural resources for internal zapovednik needs.
10.2 Measures to protect the zapovednik
10.3 Neighboring and indirect influences
11.1 Scientific Research
11.1 Conducting cartography and photo documentation
11.2 Research conducted by zapovednik staff
11.3 Research conducted by cooperating agencies and organizations
12. Buffer zones
13. Compilation of multiple-year data

Suggested Additions for a Wilderness Chronicle
- Legislative History
- Other anthropogenic factors
- Air quality data
- Threatened and endangered species
- Exotic species
- Recreation visitation, use patterns, and activity behavior trends
- Management Plans, decision notices, etc.

Helicopters are the only means of access to the remote northern *zapovednik* located across the tundra. Photo courtesy of David Ostergren.

Restoration Act passed in November 1998 calls for science-based management and authorizes the NPS to conduct more research. In partial response to these demands, federal agencies are developing methods to retrieve and utilize the data and investigations conducted on their areas. For instance, the NPS is currently inventorying its gray literature but has not decided how to use the inventory and simultaneously protect sensitive species or habitat (M. Ostergren 1999). Although larger ecological processes may not be the subject of many research projects in wilderness areas (Murray 1996), biological research is increasing in wilderness areas.

The most northern forest in the world is protected for research by the Taimir Zapovednik. Photo courtesy of David Ostergren.

Currently, the wilderness system lacks a coherent method of collecting, storing, and disseminating annual data. Websites exist within the four federal agencies and other organizations such as The Wilderness Society and the Aldo Leopold Wilderness Research Institute. An excellent source of information on wilderness (supported by the four federal agencies and the University of Montana Wilderness Institute) may be found at www.wilderness.net. A tremendous advantage to collecting and archiving Wilderness Chronicles in the 21st century is making the information available electronically via a database that is fully searchable. The 624 U.S. wilderness areas (or 641 wilderness units, see Landres and Meyer 1998) have the potential to generate a mountain of useful scientific information.

The international wilderness community is increasing its exchange of ideas, information, and philosophies. While converging policies and management techniques may be the result of several factors (Ostergren and Hollenhorst 1999), obvious evidence of increased contact is a proliferation of collaborative research projects and conferences such as the World Wilderness Congress. International comparative and collaborative research projects would benefit from consistent wilderness area reports collected in a centralized clearinghouse. An advantage to adopting the Russian chronicle format is the immediate ability to compare and contrast long-term data between the United States and 14 nations of the former Soviet Union. The momentum may prompt other nations to adopt similar chronicles.

Implementation

We suggest that one organization be dedicated for the long-term archival collection of wilderness data in a consistent, standardized manner. The database would be searchable and, ideally, annual reports from each wilderness area would be supplemented with research from cooperating agencies and universities. A challenge to any systemwide archival and record-keeping effort is allocating the funding for implementation. In a new era of shifting federal emphasis and priorities, agencies may be able to direct resources for a one-time short-term effort to create the first Wilderness Chronicle—most likely mandated at the administrative level. The administrative impetus already exists in the USFS. The USFS has indicated that the Forest Inventory and Analysis be expanded to include such areas as wilderness and urban areas (Powell, McWilliams, and Birdsey 1994). The early efforts to create a Wilderness Chronicle may rely on grants and research projects in combination with internal budgeting by the USFS, NPS, FSW, and BLM. However, to ensure long-term value and permanence, the funds for an annual Wilderness Chronicle would have to be funded by enabling legislation.

A U.S. Wilderness Chronicle modeled after the Russian *Chronicles of*

Nature might be modified to reflect the nuances of American environmental law, policy, and science. For instance, a section should be included early in the chronicle that focuses on the legislative history of the area. In chapter 10, anthropogenic influences may be expanded to include attributes such as air quality data, threatened and endangered species, exotics, recreation visitation, use patterns, and activity behavior trends. A section on management plans and decision notices also seems appropriate.

Establishing an annual Wilderness Chronicle will take time. Current resource allocation within each agency limits the amount of time that wilderness managers may dedicate to such a project. The first Chronicle of Wilderness would demand an inordinate amount of time and effort to document the resources and establish baseline information. As an example from Russia, the 4-million acre Putoranski Zapovednik in northern central Siberia was established in 1988. The first *Chronicle of Nature* was largely the result of a handful of people and was not submitted until 1991 (Lareen 1995; Putoranski Zapovednik 1991). The chronicle relied heavily on published articles and monographs and is 115 pages in length, just documenting the most prominent plant and animal species.

Similar work exists to establish the first Wilderness Chronicle for many U.S. wilderness areas. In fact, much of this information may be gleaned from wilderness plans. The federal employee responsible for each unit may work collaboratively with a university and a pool of graduate students or an internship program for the first issue. The potential exists for a whole host of partnerships between university research and educational programs, local and national nongovernmental organizations (NGOs), and other local, state, and federal agencies.

Despite some problems with access, the *Chronicle of Nature* offers an excellent model to document information from protected areas throughout the world.

In a final note, the home for the archives could be determined by stakeholders and interested parties in wilderness management. The initial group would include the four federal agencies and other academic or nonprofit institutions that are willing to donate the time and resources to house the hard copy and electronic Wilderness Chronicles. Ideally, the electronic documents will be accessible to everybody, which would avoid the necessity of an annual publication. However, enough hard copies may be warranted to supply the federal document repository. For ease of publication, wilderness units may be grouped by state, region, or agency.

Conclusion

Since the 1930s the *Chronicles of Nature* have been used by Russian *zapovednik* managers to document significant research and ecological information. In 1985 a standardized format was adopted to facilitate comparative research and long-term analysis. We suggest that a similar Chronicle of Wilderness be adopted by the U.S. NWPS. A centralized database, with standardized terms and formats, would enhance and ameliorate ecological research, philosophical

Alpine view of the Altai Mountains at 6,000 feet in the Altai Zapovednik. Photo courtesy of David Ostergren.

The Altai Zapovednik base station is located on Lake Teleskoya. The lake borders 70 kilometers of the 880,000 hectare preserve near the Mongolian border. Photo courtesy of David Ostergren.

discussion, and management decisions between individuals, institutions, and nations. By adopting a perspective that spans centuries, the current wilderness community can provide priceless information to future generations who will protect and manage the world's wilderness resources. **IJW**

DAVID OSTERGREN is an assistant professor with a joint appointment in the Department of Political Science and the Center for Environmental Sciences and Education at Northern Arizona University. He's been conducting research on Russian and American protected area policy since 1993. His address is Box 5694, Northern Arizona University, Flagstaff, Arizona 86011, USA. Telephone: (520) 523-0701. E-mail: david.ostergren@nau.edu.

STEVE HOLLENHORST is professor and head of the Department of Resource Recreation and Tourism at the University of Idaho. He can be reached at the University of Idaho, College of National Resources, Moscow, Idaho 83844-1139, USA. Telephone: (208) 882-7911. E-mail: stevenh@uidaho.edu.

REFERENCES

Davis, G. D. 1988. Preservation of natural diversity: the role of ecosystem representation within wilderness. In *Wilderness Benchmark 1988: Proceedings of the National Wilderness Colloquium,* January 13–14. Tampa Fla.; USDA Forest Service, Southeastern Forest Experiment Station: 76–82.

Colewell, M. A., A. V. Dubynin, A. Yu. Koroluik, and N.A. Sobolev. 1997. Russian nature preserves and conservation of biological diversity. *Natural Areas Journal 17* (1): 56–68.

Federal law about the specially protected natural areas. 1995. (Federalnie zakon ob osobo okhranyaemikh prirodnikh territoriyakh). Published in *33-ZF Rossiskaya Gazeta* (March 22, 1995) and Ekos Inform. 6: 3–56.

Filonov, K. P. and U. D. Nukhimovskaya. 1985. *Chronicles of Nature on Zapovedniki of the U.S.S.R.: Methodological Textbook. (Letopis prirody v zapovednikakh SSSR. Metodicheskoe posobie.)* Moscow: Na'uka.

Kozhevnikov, G. A. 1928. Kak vesti nauchnye rsboty v zapovednika kh (How to conduct scientific research in zapovedniki). *Okhrana Prirody (Protection of Nature)* 2: 12–19.

Landres, P. and S. Meyer. 1998. A National Wilderness Preservation System database: key attributes and trends, 1964–1998. *Gen. Tech. Rep. INT-GTR-18.* Ogden, Utah: U.S. Department of Agriculture, Rocky Mountain Research Station. Online: www.wilderness.net/nwps/db/default.cfm.

Lareen, V. V. 1995. Director, Putoranski Zapovednik. (Personal communication with author [August 1995].)

Murray, M. P. 1996. Natural processes: wilderness management unrealized. *Natural Areas Journal* 16 (1): 55–61.

Ostergren, D. M. 1998. System in peril: a case study of five central Siberian zapovedniki. IJW vol. 4 (3): 12–17.

Ostergren, D. M., and S. J. Hollenhorst. 2000. Convergence in protected area policy: a comparison of the Russian zapovednik and American wilderness systems. *Society and Natural Resources*. Forthcoming.

Ostergren, Marilyn. 1999. National Park Service, Natural Resources Bibliography (NRBIB) Coordinator. (Personal communication with author [March 1999].)

Powell, D. S., W. H. McWilliams, and R. A. Birdsey. 1994. History, change and the US Forest Inventory. *Journal of Forestry* 92 (12): 6–11.

Putoranski Zapovednik. 1991. *Letopis prirody (Chronicle of Nature).* Norilsk: Russia.

Shvarts, E. A. and A. E. Volkov. 1996. Introduction. In *Strict Nature Preserves (Zapovedniki) of Russia: Collection of "Chronicle of Nature" Data for 1991–1992,* ed. by Andrei Volkov. Moscow: Sabashnikov Publishers.

Stakheev, Valery Andrievich. 1995. Director of Research Sayan-Shushenski Zapovednik. (Personal communication with author [August 1995].)

Volkov, A. E. 1990. Sovremenoye sostoyaneye i perspektivi vedeniye "Letopis Prirody" gosudarstvenikh zapovedniov SSSR. (Contemporary situation and perspective of conducting "Chronicles of Nature" of government zapovedniki in USSR). In *Zapovedniki SSSR—ikh Nastoyashchae i Budushchae (Zapovedniki in the USSR—Their Present and Future).* Conference proceedings of the First All-Soviet Conference Organized after the Creation of the System of Government Committee for the Protection of Nature Goskompriroda USSR. Novgorod: 42–44.

Volkov, A. E. ed. 1996. *Strict Nature Preserves (Zapovedniki) of Russia.* Moscow: Sabashnikov Publishers.

Weiner, Douglas R. 1999. *A Little Corner of Freedom.* Berkeley: University of California Press.

Boundary Waters Wilderness

An International Story

BY KEVIN PROESCHOLDT

Minnesota's Boundary Waters Canoe Area Wilderness (BWCAW), the United State's most visited unit in the National Wilderness Preservation System (NWPS), has witnessed a number of recent milestones and events that have involved both looking back and moving ahead.

At 1,087,000 acres in size, the BWCAW lies along the international border in the northern part of Superior National Forest. It is this nation's only large lakeland unit in the wilderness system. With over a thousand clear lakes connected by streams and portage trails, visitors travel primarily by canoe rather than by trail. The largest wilderness east of the Rockies and north of the Everglades, the area attracts more than 200,000 visitors each year, accumulating about 1.5 million recreation visitors days of use annually.

The BWCAW has been a leader in the wilderness movement in the United States since the 1920s. It received formal wilderness protection in 1926, when Secretary of Agriculture William Jardine designated 1,000 square miles (660,000 acres) of Superior National Forest as wilderness. Since then the BWCAW has often been in the vanguard of the wilderness movement, from its 1926 protection to designation as an original unit of the NWPS in 1964 and beyond.

International Peace Memorial Forest

Part of the unique character of the BWCAW lies in its international location. While located entirely within Minnesota, it also adjoins the 1.2-million-acre Quetico Provincial Park in Canada. Quetico is classified as a wilderness class park under the Ontario provincial park system and has been protected as a provincial park since early this century. Along with the United States's 218,000-acre Voyageurs National Park immediately to the west of the BWCAW and Ontario's LaVerendrye Provincial Park on the east, the broader Quetico-Superior Ecosystem that includes all of these areas comprises an international wilderness complex of some 2.5 million acres (1 million hectares).

Article author Kevin Proescholdt.

The Quetico-Superior Ecosystem is an early example of what international conservationists currently call Trans-Frontier Conservation Parks (TFCP). In 1909 President Theodore Roosevelt established the Superior National Forest, the same year that Ontario established Quetico, initially as a Forest Reserve. As early as the 1920s conservationists in both countries had begun to call for the dedication and protection of this area as the Quetico-Superior International Peace Memorial Forest, dedicated to the service of men from both countries who had served in World War I. American Ernest Oberholtzer, later a founder of The Wilderness Society (TWS) in 1935, led the effort in the United States and worked with Canadian counterparts such as Arthur Hawkes to promote the international designation.

Problems arose with this scheme, however. Signing an international treaty to create the peace forest between the U.S. federal government and the Canadian federal government (dealing with Ontario provincial lands) posed diplomatic and jurisdictional problems from the

Wilderness requires collaboration; no one agency or entity controls the whole system.

Truck in Trout Lake. Photo by Kevin Proescholdt.

Aftermath from the BWCAW July 4, 1999 Blowdown. Photo by Cathy Grundhauser.

start. But the concept of an international wilderness preserve was sound. While the peace forest was never formally designated, the international conservation work by people from both nations led to the designation and protection of the current conservation units in both countries today.

Sigurd Olson Centennial

One person who looms large in the history of the BWCAW and the Quetico-Superior is Sigurd F. Olson. Sig lived in Ely, Minnesota, on the doorstep of the BWCAW, from the early 1920s until his death in 1982. He worked as a canoe guide and outfitter, taught at the local junior college, and later became dean of the same college. Sig became involved with the early efforts to protect the canoe country wilderness from the 1920s onward. He eventually resigned his position as dean of the college shortly after World War II to devote his life to saving the wilderness he loved so deeply from the many threats and development pressures that nearly overwhelmed it.

Sig soon developed and implemented a national campaign. In 1948 he convinced Congress to pass the Thye-Blatnik Act, a law that provided money to the U.S. Forest Service (USFS) to purchase private inholdings within the area. The Thye-Blatnik Act was in many ways an early precursor to the 1965 Land and Water Conservation Fund that provided similar funding nationwide. At the same time, Sig convinced President Harry Truman to sign an executive order in December of 1949 that established an unprecedented airspace reservation over the wilderness to protect the area from float plane traffic and landings.

These conservation efforts brought Sig to the attention of national conservation organizations. He served on the boards of directors, including terms as president, for both the National Parks Association and TWS. Sig became involved in conservation battles from coast to coast and north to Alaska where he served on a special Department of Interior panel that helped identify many of the areas ultimately protected by the 1980 Alaska National Interest Lands Conservation Act. He also found the time to inspire and help lead many regional conservation groups as well, including the Friends of the Boundary Waters Wilderness (FBWW). Sig also became an accomplished writer of eight wonderfully evocative books about the Boundary Waters and the Quetico-Superior region. Books like *The Singing Wilderness, Listening Point,* and *Reflections from the North Country* describe the area's wilderness values

and the need to protect them. His books won a number of coveted national writing awards.

In 1999 a series of celebrations and events marked the centennial of the birth of Sigurd F. Olson. Events in Ely and Ashland, Wisconsin (home of Northland College's Sigurd Olson Environmental Institute), helped mark the milestone. As part of this celebration, the FBWW partnered with TWS to produce a 24-page full-color magazine-style publication commemorating Sig and his legacy. Free copies of this publication are still available by contacting the FBWW office.

July 4, 1999 Blowdown

On July 4, 1999, a tremendous windstorm blew across the BWCAW. Winds of over 100 miles per hour swept across the wilderness in a downburst or "derecho" event. A total of 478,000 acres—367,000 acres inside the wilderness—was affected by the windstorm; about 140,000 acres received heavy damage (67 to 100% of overstory trees removed), another 158,000 acres received moderate damage (34 to 66%), and yet another 180,000 acres received light wind damage (10 to 33%)

Dramatic though it was, the Independence Day blowdown was still a natural event. The disturbance-dependent ecosystem of the BWCAW has always seen (and indeed needs) periodic natural disturbances such as fire or wind to regenerate the forest. One purpose of wilderness designation was to allow ecosystem functions like this to occur.

The BWCAW blowdown, however, poses special challenges to wilderness managers in the USFS as well as for wilderness advocates. The new accumulation of fuel from the blowdown has changed the likelihood, size, and type of fire that may occur within the wilderness. Fire suppression over the past decades had already changed some of the fire dynamics in the BWCAW, and restoring fire to its natural role within the wilderness has been a goal of wilderness advocates for some time.

The USFS has brought in teams of experts to study and model fuel loadings and fire behavior in the aftermath of the storm. One possible approach that the agency may take will be to use small management-ignited fires to restore fire to strategic areas of the blowdown. This will break up the solid mass of the blowdown and create more of a patchy mosaic, reducing the likelihood of a massive wildfire that might escape to burn outside the wilderness boundary.

Evidence of the July 4, 1999 Blowdown that occurred in the BWCAW. Photo by Cathy Grundhauser.

Wilderness advocates are asking questions about the approach. Does human manipulation of the wilderness by setting fires (generally in opposition to wilderness values) make sense in light of the years of fire suppression? Will ignited fires within the wilderness be used for wilderness purposes, or are they primarily to protect cabins and resorts outside of the wilderness? What are the ecological differences on a landscape scale between smaller management-ignited fires versus the larger stand-replacement fires that historically burned in the BWCAW? These are only a few of the questions to be faced in the months and years ahead.

Only when we have had the wisdom and humility to replace the last whine of an outboard in the BWCAW with the call of a loon will its legacy for future generations be complete.

Does human manipulation of the wilderness by setting fires (generally in opposition to wilderness values) make sense in light of the years of fire suppression?

The fire-scarred trunk of a red pine. Photo by Kevin Proescholdt.

Recent Congressional Attacks

The BWCAW has also seen a major attack on its wilderness protections recently in the Congress. Senator Rod Grams (R-MN) and Representative James Oberstar (D-MN) began the assault in 1995 soon after Grams's election. They sought to overturn a number of protections for the area by opening up wilderness lakes to motorboats, opening three portage trails to truck and Jeep traffic, and by creating a local management council (dominated by local antiwilderness officials) that had the ability to dictate to the USFS how the area should be managed.

Wilderness conservationists successfully fought these plans throughout 1995, 1996, and 1997, with help from citizens across the nation, bipartisan supporters in Congress, the USFS, and the Clinton Administration. In addition to the damage to the BWCAW, they argued that such moves could also create troublesome precedents for the entire NWPS.

Pictograph cliffs, La Croix. Photo by Kevin Proescholdt.

However, in 1998 Oberstar's seniority and clout overcame this opposition. Oberstar, the ranking Democrat on the House Transportation Committee, also served as one of the three House conferees on the massive $200 billion federal transportation bill called Inter-modal Surface Transportation Equity Act, or ISTEA. During the final conference-committee negotiations on ISTEA, Oberstar attached an unrelated amendment dealing with the BWCAW to the ISTEA bill, even though the amendment had never passed the House or the Senate. Though expressing his opposition to the BWCAW amendment, the president signed the ISTEA measure into law.

The Oberstar amendment opened two wilderness portage trails (Prairie and Trout) to motor vehicle traffic in order to haul larger motorboats from lake to lake. Long-time wilderness champion Representative Bruce Vento (D-MN) managed to blunt some of the damage, and succeeded in pushing Oberstar to agree to close two small lakes (Alder and Canoe) to motorboat traffic as part of the package.

The Oberstar amendment represented a definite setback to wilderness values in the BWCAW. However, the FBWW and other wilderness advocates have begun plans to not only reverse the damage of the recent Oberstar amendment, but to finally give the BWCAW the full nonmotorized wilderness protection it so richly deserves. Only when we have had the wisdom and humility to replace the last whine of an outboard in the BWCAW with the call of a loon will its legacy for future generations be complete. **IJW**

KEVIN PROESCHOLDT, a former wilderness guide, has worked as the executive director of the Friends of the Boundary Waters Wilderness for the past 15 years. He is also the lead coauthor of *Troubled Waters: The Fight for the Boundary Waters Canoe Area Wilderness.* Contact Kevin at Friends of the Boundary Waters Wilderness, 1313 Fifth Street Southeast, Suite 329, Minneapolis, Minnesota 55414, USA. Telephone: (612) 379-3835. E-mail: kevin@friends-bwca.org. Website: www.friends-bwca.org.

Announcements & Wilderness Calendar

Outdoor Behavioral Healthcare Industry Council (OBHIC) Commits to Land Use Philosophy

OBHIC, a consortium of wilderness therapy and outdoor treatment programs concerned with raising standards in their growing industry, has committed to a statement of philosophy regarding the use of public lands by therapeutic programs. OBHIC believes that the use of public wildlands by outdoor treatment and therapeutic programs is a legitimate use of these lands, is compatible with the practice of multiple use, and lies within the scope and purpose of the concept of public lands. The new philosophy states:

> We believe that all users of public lands, including treatment programs, should be wise stewards of the land, practicing minimal impact methods. Use by treatment programs does not consume non-renewable resources and can be sustained indefinitely with minimal negative impact on resources through prudent management practices. Outdoor treatment programs foster attitudes of appreciation and respect for the environment in staff and students.
>
> OBHIC member programs recognize the rights of other users of public lands, and are committed to mini-

mizing our negative impact on these other users. We accept the premise that commercial users of public lands should pay for that use, and we pledge to cooperate with officials of land management agencies in formulating sound management plans and monitoring impact.

We believe that the use of public lands by treatment programs benefits society by providing an effective treatment alternative. The use of public wild lands by treatment programs provides opportunities for individual healing and development that would be difficult to replicate in any other setting.

For more information, contact: Gil Hallows, director, Aspen Achievement Academy, Loa, Utah 84747, USA. E-mail: ranch@color-country.net.

Wilderness Field Courses in Southern Africa

The University of Idaho and The WILD foundation are teaming up to offer two four-week International Wilderness Field Studies courses in Southern Africa in June 2001. If the 7th World Wilderness Congress is confirmed in the region then as planned, the course will be timed to include attendance. The Wilderness Leadership School of South Africa, an affiliate of WILD, will be host, providing arrangements for many course activities.

The courses will offer nine academic credits and will focus on management of wilderness and wildlife habitat ecological and use issues, local indigenous and countrywide political concerns, and international ecotourism. Each course will feature guided wilderness experiences and contact with local wilderness scientists, managers, and program leaders.

The course in South Africa will include guided wilderness experiences and/or field studies in the Umfolozi Game Reserve, Drakenberg Mountains, newly established Lake St. Lucia World Heritage Site, world-renowned Krueger National Park, and a modern bush camp featuring African wilderness and wildlife as an ecotourism attraction.

The course in Namibia will feature wilderness experiences in Waterberg National Park and the world renowned Namibian desert, and time with WILD affiliate, the Cheetah Conservation Fund program (see *National Geographic,* Dec. 1999) that combines privately owned habitat, research, and cooperation with local ranchers.

Contact: Dr. Steve Hollenhorst, e-mail: stevenh@uidaho.edu or Dr. Keith Russell, e-mail: keithr@uidaho.edu.

National Mountain Conference in September

Are you and your organization contending with mountain stewardship issues and the conflicts that may arise in multirecreational use areas? Are you trying to define the major challenges to be faced in managing and protecting mountain environments in the next decade? If so, the National Mountain Conference, Stewardship and Human Powered Recreation for the New Century may be for you. It will be held in Golden, Colorado, USA, on September 14–16, 2000.

For more information contact National Mountain Conference c/o AMC—Research Department, P.O. Box 298, Gorham, New Hampshire 03581, USA. E-mail: melhov@landmarknet.net. Or phone Ken Kimball at (603) 466-2721, ext. 199.

Dugger Mountain—New Wilderness Area

Legislation making Dugger Mountain a wilderness area was signed into law by President Clinton, making Dugger the third wilderness in the national forests in Alabama. Dugger Mountain is the second highest peak in Alabama at 2,140 feet, with approximately 9,200 acres designated as wilderness. This designation brings the total wilderness acres to more than 41,000, about 7% of the total land base of the national forests in Alabama.

The designation followed protection of Dugger Mountain as a wilderness study area under the Alabama NF Land and Resource Management Plan of 1986. *IJW* congratulates the national forest in Alabama, James A. Gooder, supervisor. Every acre counts!

Paul Petzoldt: American Wilderness Icon

Wilderness lost a legendary mountaineer and outdoor educator on October 6, 1999. Paul Petzoldt, founder of the National Outdoor Leadership School (NOLS) and Wilderness Education Association (WEA), died at 91.

Paul Petzoldt.

"Paul was a tireless visionary," said Jeff Liddle, former director of WEA. "He was one of the first people to draw a line in the sand between what it meant to be an outdoor leader versus an outdoor enthusiast."

Celebration Adds Acres to Wilderness System

The California-Nevada region of The Wilderness Society celebrated the 35th anniversary of The Wilderness Act by working successfully with the National Park Service (NPS) to add 1,752 acres at Point Reyes National Seashore to the National Wilderness Preservation System (NWPS). Located on a peninsula about 10 miles north of San Francisco, Point Reyes provides exceptional ocean scenery and a break from urban pressures. When the 25,370-acre Point Reyes Wilderness was created by Congress in 1976, these areas were denied wilderness status because of a utility line and other incompatible uses. Under the law, the NPS has the power to add such areas to the NWPS if the nonconforming uses are eliminated.

World Parks in Developing Nations Are at Risk

Many national parks and government-protected wilderness areas in developing nations are threatened or in bad condition, according to a new report conducted by the World Conservation Union. Many are at risk from logging, hunting, mining, pollution, agriculture, human settlement, tourism, and war. The World Bank and the World Wildlife Fund, which jointly sponsored the report, have launched an effort to work with indigenous people and governments to improve protection and management of 125 million acres of threatened national parks and other protected areas by 2005. Most of the money for that endeavor will come from the Global Environmental Facility, managed by the World Bank.

For more information: *San Francisco Chronicle/Examiner,* Associated Press, David Briscoe, December 3, 1999. *(Excerpted from* GRIST MAGAZINE, *a project of the Earth Day Network, http://www.earthday.net.)*

South East Queensland Forest Agreement Expands Conservation Reserve

Excellent news from Queensland, Australia. In a landmark agreement, the Australian Rain Forest Conservation Society, Queensland Conservation Council, and The Wilderness Society of Australia signed an agreement with the Queensland Government and the Timber Board. The South East Queensland Forest Agreement adds 425,000 hectares to the conservation reserve system immediately, guarantees a 25-year supply to most hardwood sawmills and, most importantly, schedules an end to all native forest logging on public land by the year 2024. This brought to a successful end a six-year process of planning, assessment, consultation, and negotiation, often a contentious and trying bit of work.

Conservation outcomes:

- a 2.2% increase in the area of native forest, now totaling 782,000 hectares;
- reservation of 73% of native forest on public land, rising to 100% over 25 years;
- protection of all old growth forest on public land;
- reservation of most of the identified, high quality fauna habitat.

WILD Foundation and UNEP present the WILD Awards

In partnership with the United Nations Environment Program, the WILD Foundation has launched a new series of annual awards aimed at recognizing and encouraging greater responsibility in the use of the images of wild nature in corporate advertising.

The WILD Awards, advertising with integrity for nature conservation, were inaugurated at a luncheon at the United Nations headquarters, New York, in October 1999. Designed to honor companies and advertising firms that responsibly feature wildlife or wilderness in their advertising campaigns and are leaders in contributing to the protection and sustainability of our wild world, the inaugural awards were presented in the following categories to:

- National Excellence—to Canon, USA (and their in-house agency), for their extensive work through the Clean Earth Campaign, the PBS series *Nature,* and considerable support to the National Parks of the United States
- International Excellence—to NedBank of South Africa (and to their agency Ogilvey Mather and The Hardy Boys) for its innovative Green Trust program that has funded and supported over 120 sustainable conservation projects
- Regional Excellence—to Georgia Power (and their agency, Pollack Levitt & Nel) for extensive involvement in regional habitat conservation
- Lifetime Achievement Award—to Mutual of Omaha (and Bozell Worldwide, advertising firm) for their pioneering work for over 35 years in bringing conservation awareness and education to the public through *Mutual of Omaha's Wild Kingdom* and its Wildlife Heritage Center.

For more information on the WILD Awards 2000, contact Ms. Mandi Hogan at mandihogan@uswest.net.

St. Lucia World Heritage Site

The Greater St. Lucia Wetlands Park has officially been declared a World Heritage area by UNESCO, in formal approval of a submission by the South African government. The largest estuary in Africa, St. Lucia has more biodiversity than the Kruger Park and the Okavango Delta (Botswana) combined. It was the subject of an intense international struggle for over five years between Rio Tinto Zinc (the world's largest mining company) and a wide-ranging grass-roots band of NGOs. Lake St. Lucia itself contains one of the few designated "water wilderness" zones in the world, and wilderness foot treks have been conducted on the forested sand dunes and eastern shores of St. Lucia for decades by the Wilderness Leadership School.

Listening Point

Robert Olson, retired U.S. State Department foreign officer and son of the pioneer of the wilderness movement, the late Sigurd Olson, has announced the establishment of the Listening Point Foundation. LPF, named after the famous lakeside cottage and land to which Sig, his wife, and family would retreat. LPF will disseminate and seek to perpetuate the wilderness work, writings, and legacy of Sigurd Olson, one of the great icons and articulators of the wilderness message. For more information contact Robert K. Olson, President, the Listening Point Foundation, 13567 North Uhrenholdt Drive, Hayward, Wisconsin 54843, USA.

Wilderness Horizons Conference a Success

The Wilderness Horizons conference at Northland College in northern Wisconsin convened 150 scholars, students, and wilderness advocates in late September to reacquaint old friends and introduce a new generation to Sigurd Olson's conservation legacy and writing. It also updated a diverse audience on the status and needs of North Country wilderness. The conference was preceded by wilderness advocacy training by the Minneapolis-based Friends of the Boundary Waters Wilderness.

Keynote speaker: former Wisconsin governor, senator, and Earth Day founder Gaylord Nelson, now working as counselor to The Wilderness Society, inspired the Wilderness Horizons crowd, calling for a national discussion about population control, and urging that federal wilderness protection be extended to another 100 million acres of U.S. land. Nelson also sounded a call of alarm for our country's national park system, noting that park visitors now number 300 million each year, a tenfold growth in the past 50 years. "All of the parks of the greatest park system in the world are in serious decline," he said. "If we don't reverse the trend, in four or five decades, the national parks as we know them will be gone."

Conference plenary sessions provided participants an overview of wilderness status and planning in the Apostle Islands National Lakeshore, Isle Royale National Park and Chequamegon-Nicolet National Forests, and management and ethical issues surrounding the widely reported 350,000-acre timber blowdown in the Boundary Waters Canoe Area Wilderness.

In the conference's closing address, international wilderness expert Vance Martin, President of the WILD Foundation, cautioned that the American wilderness movement is not paying attention to demographics. "By the year 2010, the majority of people under 25 in American will be nonwhite," Martin said. "This is a profound issue in the American wilderness movement. Wilderness must be meaningful to these people and they must be involved in the movement. Let's do something about it, please." (Contributed by Clayton T. Russell, Larry Wiland, Ben Rupert, and Ben Niedbalski, Northland College. Contact Clayton Russell, crussell @northland.edu.)

Research Connections Available to Outdoor Practitioners and Researchers

Research Connections, a periodic research update distributed by Indiana University's Department of Recreation and Park Administration, is available to practitioners and researchers who have interest in the fields of outdoor adventure programming, leadership training, camping education, and outdoor experiential therapy. Each issue of *Research Connections* spotlights two or three recent research studies in these areas, providing study highlights and applications for practice. To join the mailing list or electronic mailing list, e-mail to resconx@indiana.edu. To download past issues, visit the website: www.indiana.edu/~outdoor/resconx.htm.

Research Links: A Forum for Natural, Cultural, and Social Sciences

Research Links is a peer-reviewed research publication aimed at professionals, park managers, and academics interested in research activities in western Canada's national parks and national historic sites. It is a multidisciplinary publication, highlighting research in natural, cultural, and social sciences. *Research Links* focuses on research activities and needs

in western Canada, but accepts articles from other regions that may be of interest to readers. One of the main objectives of *Research Links* is to enhance communication among and between park managers and researchers.

In style and content, *Research Links* lies somewhere between an interpretive newsletter and a refereed journal. Although not a publication, articles are technically reviewed by an editorial board of experienced park staff and an academic expert.

Contributors to *Research Links* include park staff, researchers from other government departments, consultants, graduate students, and university professors. The target audiences include Parks Canada senior managers and staff; university researchers, academic faculty, and graduate students; other federal, provincial, and municipal land and resource managers; consultants: and other individuals.

For information, contact Dianne Willott, production editor. Telephone: (403) 221-3210. E-mail: Research_Links@pch.gc.ca.

Virginia Wildlands Report Calls for Land Protection

Many of the remaining unspoiled places in the Jefferson National Forest could be lost forever if the U.S. Forest Service (USFS) fails to protect them, according to a report released by The Wilderness Society and 33 other citizen groups. In the report, entitled "Virginia's Mountain Treasures: The Unprotected Wildlands of the Jefferson National Forest," the groups ask the USFS to save 67 areas from logging and road-building in the upcoming forest plan for the Jefferson National Forest, located in southwestern Virginia and adjacent to West Virginia and Kentucky.

Only 7% (about 58,000 acres) is permanently protected as congressionally designated wilderness on the Jefferson National Forest. An additional 155,000 acres receive limited administrative protection—the Appalachian Trail corridor, for instance. But up to 276,000 acres should be added to the Jefferson's protected land base, the report urges. Most of these areas are roadless, largely undeveloped, and remote. For a free hardcopy of the report, contact kathie_vancura@tws.org. *(Excerpted from WildAlert of The Wilderness Society)*

Protection for the Central Suriname Wilderness Nature Reserve

The Central Suriname Wilderness Nature Reserve sets an important precedent in protecting large blocks of undisturbed tropical wilderness. But it is only a first step. The challenge for Conservation International (CI) and its partners is to continue these efforts to protect the ecological viability of the world's last remaining tropical wilderness areas.

To meet this challenge, CI will create the Tropical Wilderness Protection Fund (TWPF) to help finance major conservation corridors in the Earth's few remaining major tropical wilderness areas.

After a decade of work in more than 20 countries, CI believes it can marshall the technical resources to identify the key wilderness areas that must be conserved. Increasingly, they are seeing that, like the government of Suriname, other governments are willing to consider innovative agreements to step beyond their core set of protected areas and move to protect larger blocks of the world's remaining tropical wilderness areas.

For further information, go to http://www.conservation.org/WEB/CILIB/PUBLICAT/POLPAPR/SURINAME/FUTURE.HTM.

Leave No Trace Research Projects Needed

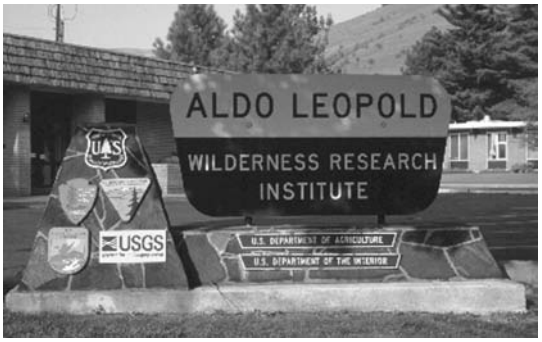
Leave No Trace (LNT), Inc. has initiated a large-scale education effort known as the Leave No Trace Laboratory. The first phase, the San Juan project, was established in the vicinity of Durango, Colorado, in the fall of 1999. LNT, Inc. will work with federal land management agencies, local groups, and businesses to develop and deliver LNT messages and encourage research to document and evaluate the effectiveness of this educational effort in specific, and of the LNT methodology in general. Potential research goals include the following: (1) Effectiveness of the educational effort (i.e., Are visitors to target areas aware of the LNT message? To what degree is this attributable to the Lab project or a priori knowledge?); (2) salience of the message to newly exposed visitors; (3) impact of the message on visitors' behavioral intent and behavior in the field; and (4) effect of the project on the areas resources.

Please contact Scott Reid v (scott@lnt.org; (800) 332-4100) to request descriptive information to explore interest in preparing a short proposal.

Snowmobiles Banished in Northern Rockies Candidate Wilderness

The roar of snowmobiles will no longer be heard across 400,000 acres of Lolo National Forest in Montana USA. These lands, including the Great Burn along the Idaho border, are prime candidates for addition to the National Wilderness Preservation System. The U.S. Forest

Continued on page 48



NEWS from the Aldo Leopold Wilderness Research Institute

Wilderness Science and the Aldo Leopold Wilderness Research Institute

BY DAVID J. PARSONS, DIRECTOR

Wilderness and other large natural areas protect biological diversity and provide opportunities for important human-nature experiences. Yet increasing visitor use and external pressures threaten the biological and societal benefits derived from wilderness. Increasingly, the preservation of wilderness requires subtle management of natural resources and human activities. Such management requires understanding of wilderness resources and values as well as the threats to them. Science provides that understanding and is thus critical to informed wilderness management. Wilderness also provides opportunities for understanding basic relationships between humans and nature. In this role, wilderness is also critical to science.

The relationship between wilderness and science has long been recognized. In 1921, Aldo Leopold called for setting aside "representative" wilderness areas. In 1941, in his essay "Wilderness as a Land Laboratory," he extolled the value of wilderness to science as a "base-datum of nomality." In 1942 E. Lowell Sumner wrote, "To the men of science, the dwindling wilderness is an irreplaceable reservoir of information on natural conditions." The 1964 Wilderness Act explicitly addressed "scientific … use" as one of the "purposes" of wilderness. More recent testimonials to the importance of science to wilderness include a 1992 report by the National Academy of Sciences that noted that managing the resources of protected areas "requires scientific knowledge … and application of that knowledge." Yet the conduct of scientific activities in wilderness continues to evoke controversy over both their appropriateness and necessity. Science has yet to be fully integrated into our wilderness management programs.

In 1993 the U.S. Forest Service, with support from the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service (and subsequently the U.S. Geological Survey, the research heart of the Department of the Interior) established the Aldo Leopold Wilderness Research Institute. The Leopold Institute provides coordination and direction to ecological and human-dimensions research relevant to the understanding and management of wilderness and other protected areas. It is located on the campus of the University of Montana in Missoula.

The Leopold Institute aims to conduct and expand wilderness research through partnerships with agencies, universities, and nongovernmental organizations, and to facilitate the application of new and existing knowledge on national and international wilderness-related issues. Current studies focus on the effects of recreation use and management strategies on wilderness attributes; the effects of management practices, such as for fire, wildlife, and exotic species, on wilderness resources; the development of wilderness monitoring protocols; understanding the consequences of manipulative restoration in wilderness; and understanding of human experiences in wilderness. We will explore a number of these topics in coming issues.

A regular contribution to IJW from the Aldo Leopold Wilderness Research Institute, an interagency program committed to providing leadership in developing scientific knowledge to sustain wilderness ecosystems and values.

For more information, contact The Leopold Institute, P.O. Box 8089, Missoula, Montana 59807, USA. Telephone: (406) 542-4190. Website: www.wilderness.net/leopold.

Errata: *The News Column from the Aldo Leopold Wilderness Research Institute in the December 1999 issue [*IJW *Vol. 5, No. 3] contained information that was outdated. Both the Fee Demo Program and the Fee Website have been extended and are still in effect.* **—IJW Editor**

Book Reviews

JOHN SHULTIS, BOOK REVIEW EDITOR (shultis@unbc.ca)

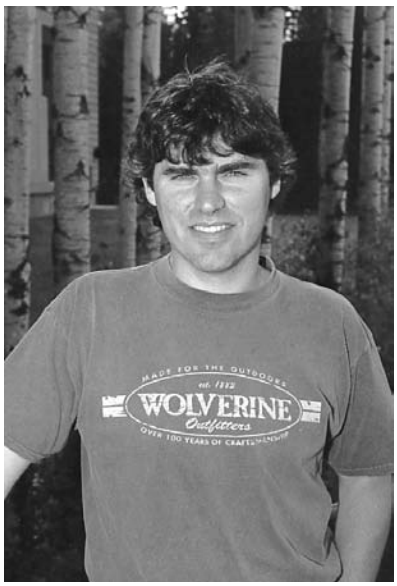
The Four Shields: The Initiatory Seasons of Human Nature by Steven Foster, with Meredith Little. 1998. Lost Borders Press, P.O. Box 55, Big Pine, California 93513, USA. $19.95.

This important new book integrates ancient and current understandings. Foster and Little, founders of the School of Lost Borders in Big Pine, California, a training facility for wilderness rites of passage guides, draw on their 30-plus years of wilderness-based teaching to articulate a detailed and thoroughly cross-referenced model of human nature, personal growth, and healing. It will be especially welcome and valuable to those interested in the uses of wilderness for therapeutic and personal growth.

Its basic premise is deceptively straightforward: the human self is an aspect of nature, and the same basic dynamics apply both to natural processes and to the self. The four seasons (of the northern temperate zone where Foster and Little live) provide not just a metaphor, but a mirror for the four seasons, qualities, or "shields" of human nature. They apply these four shields to stages of human development, personality types, cognitive styles, suffering and disorder, aspects of disease and the immune system, expressions of love, etc.

Nature, however, is not static. As with natural processes, transitions and initiations are as important as the stages and styles themselves. The failure to negotiate any of these transitions or to fully complete these initiations, big or little, results in various kinds of distress and arrested development. Their understanding of the dynamics of the four shields provides the basis for an ecopsychology or wilderness therapy of the finest sort, one that is truly based on field experience as well as sensitivity, sophisticated reasoning, and inspiration. This book is an ambitious project, and it works.

In this book, Foster and Little satisfy several important needs of ecopsychologists, ecologically oriented philosophers, and those using wilderness settings for therapy, personal insight, and growth. First, an understanding of the connection between the human psyche and the natural world is central to this work. But a genuinely Earth-centered and field-based analysis of the human nature connection has been elusive. This book provides the most detailed and thorough such description I have encountered.



Book review editor John Shultis.

Second, while many wilderness challenge and therapy programs promote self-esteem, modify self-defeating behavior, develop leadership skills, and foster teamwork, all of which are important outcomes, this book shows why and how nature can also facilitate deep healing, growth, and initiation. For Foster and Little, nature is not just a backdrop or opportunity for challenge activities and psychological renewal. Wilderness is the source and key element in their work. However, while their model and methods originate in their wilderness experiences (as well as in ancient understandings and practices), they can also be used in nearby nature, therapists' offices, classrooms, or workshops.

Third, there is a need for specific wilderness-based practices for personal growth and healing. This book describes more than 25 specific exercises (or rites, as they call them), drawn directly from the four shields model. Since each exercise is illustrated with clear case studies, the reader is given a context and means to adapt them to other situations.

The writing is extraordinary. Some parts are richly poetic, some are detailed lucid explanations, and some are intimate and emotional portrayals of deep soul-searching. Still other parts entertain, as well as instruct, with stories of trainees and students, including some from the filming of a particular coming of age ritual. (See *Lost Borders,* Bullfrog Films, www.bullfrog films.com.) Well-chosen selections from literature and poetry, and illustrations by James Wright add to the book's textures.

The Four Shields is the latest book in Foster and Little's impressive lifework. They show that they are wise, caring, and human teachers, and that the exercises they describe are powerful, though not magical. In their authentic and down-to-earth openness, their teachings become all the more compelling. But this is not an easy book. Rather, it needs and deserves to be studied carefully. Then the lessons can be applied by all of us interested in our relationships to the Earth, healing, and human development.

—Reviewed by John Davis, professor of psychology, Metropolitan State College of Denver. Email: davisj@mscd.edu.

Bounded People, Boundless Lands: Envisioning a New Land Ethic by Eric Freyfogle. 1998. Washington, D.C.: Island Press. 200 pp., $24.95 (hardcover), USA.

The excerpts on the back cover of this book refer to the "quiet wisdom" and "vision" contained within, and this is mostly accurate. It is a quiet, subtle consideration of the past and present human-land relationship, with particular reference to the American landscape. I have to admit that I wasn't immediately taken with the author's work; the beginning chapters were repetitive of ideas raised in other works. However, in the end I believe his argument raises some unique and interesting ideas on a 21st-century land ethic.

Freyfogle brings together a reflective history of environmental concerns and American responses to those concerns, an assessment of the use of private property rights with regard to land, and the vision of people-land relationships contained in distinctly American literature. In particular, he looks at land as articulated by Robert Frost and Wendell Berry. It's an interesting approach, and one that works in leading readers to understand the complex nature of the concept of land and land ethic.

As Freyfogle discusses, the concepts of American "private" property rights have particular outcomes when combined with the peculiarly North American belief of individualism. In particular, he assesses the environmental costs of our view of the rights of the individual superseding those of the community. Building on this discussion, he explores some early legal resource allocation decisions and their implications for our view of the land and resources, and he undertakes an unusually clear discussion of the modern-day variant of "property takings." To this he adds some case studies that he is intimately familiar with (through personal involvement) and looks in detail at how people have come together to open up the idea of "property" to include "community" and to work toward a local definition of land health. I appreciated his assessment of actions that had worked to move people toward this end. It was also a pleasure to find a discussion of things that have worked, as well as those that failed.

The author's interest in other sources of land wisdom, in particular from literature, was appreciated. Poet Robert Frost captures a sense of landscape in the Northeast and the interactions of two farmers as they divide out the boundaries of their respective properties. In contrast is Berry's literary creation of a farmer and farm community, which work toward the long-term sustainability of land through recognition of the shared nature of the land, the consequences of individual selfishness, and the long-range view necessary for land health. In the first piece, it is the land that is bounded by human perspective. In the second, it is the people who are bounded, willingly, to a land that extends beyond human community and beyond past and future in human terms.

In his conclusion Freyfogle writes: "American and other Western cultures have been overly inclined to divide the natural world into pieces and to see the land community not as a blurred mosaic of ecosystems but as a collection of homesteads, water flows, and natural resources. The same tendency

toward division and separation shows up in the social realm … ."

But the more a society emphasizes boundaries—the more weight it gives to property lines and individual autonomy—the more it denigrates the natural and social fabrics. A sense of boundlessness needs to undergird a new land ethic, an ethic not just for individuals but for gathered communities.

The stories of the people and the land Freyfogle tells emphasize what Aldo Leopold and others have dreamed of, a community sense of health of both land and inhabitants. Seeing the land as a whole, boundless, is a necessity for those who, for love or reason, bind themselves to the larger ecological community that makes up the land. These are the sorts of stories that Freyfogle tells, and those he would like the rest of us to tell ourselves. I recommend the book.

—Reviewed by Annie L. Booth, associate professor in the Environmental Studies Program at the University of Northern British Columbia, Canada. E-mail: annie@unbc.ca.

IJW Books Reviewed: Inaugural Issue to Present

September 1995, Vol. 1, Issue 1

Acts of Discovery by Albert Furtwangler (Reviewed by Jim Fazio)

Field Notes by Barry Lopez (Reviewed by Jim Fazio)

December 1995, Vol. 1, Issue 2

Northern Protected Areas and Wilderness by Juri Peepre and Bob Jickling (Reviewed by Jim Fazio)

The Capacity for Wonder: Preserving National Parks by William R. Lowry (Reviewed by Jim Fazio)

The Wilderness Movement and the National Forests by Dennis M. Roth (Reviewed by Jim Fazio)

The World of Wilderness: Essays on the Power and Purpose of Wild Country edited by T. H. Watkins and Patricia Byrnes (Reviewed by Jim Fazio)

May 1996, Vol. 2, Issue 1

Coyotes and Town Dogs—Earth First! And the Environmental Movement by Susan Zakin (Reviewed by Jim Fazio)

A Symbol for Wilderness: Echo Park and the American Conservation Movement by Mark W. T. Harvey (Reviewed by Mark Peterson)

August 1996, Vol. 2, Issue 2

Wild Ideas edited by David Rothenberg (Reviewed by Jim Fazio)

Guardians of the Parks—A History of the National Parks and Conservation Association by John C. Miles (Reviewed by Douglas M. Knudson)

Troubled Waters: The Fight for the Boundary Waters Canoe Area Wilderness by Kevin Proescholdt, Rip Rapson, and Miron L. Heinselman (Reviewed by Michael Frome)

December 1996, Vol. 2, Issue 3

Wilderness Ethics—Reserving the Spirit of Wilderness by Laura and Guy Waterman (Reviewed by Jim Fazio)

Landscape Approaches in Mammalian Ecology by William Z. Lidicker, Jr. (Reviewed by James M. Peek)

March 1997, Vol. 3, Issue 1

Wilderness Therapy: Foundations, Theory, and Research by Jennifer Davis-Berman and Dene S. Berman (Reviewed by Jim Fazio)

Thelon—A River Sanctuary by David F. Pelly (Reviewed by Jim Fazio)

Northern Wilderness Areas: Ecology, Sustainability, Values edited by Anna-Lisa Sippola, Pirjo Alaraudanjoki, Bruce Forbes, and Ville Hallikainen (Reviewed by Bjorn P. Kaltenborn)

June 1997, Vol. 3, Issue 2

The Soul Unearthed: Celebrating Wildness and Personal Renewal Through Nature edited by Cass Adams (Reviewed by David Cockrell)

The Lochsa Story: Land Ethics in the Bitterroot Mountains by Bud Moore (Reviewed by Jim Fazio)

September 1997, Vol. 3, Issue 3

Deep Ecology in the High Arctic, International Ecophilosophical Symposium (Reviewed by Bjorn P. Kaltenborn)

The Boundary Waters Wilderness Ecosystem by Miron Heinselman (Reviewed by Forest Stearns)

December 1997, Vol. 3, Issue 4

Wilderness and the Changing American West by Gundars Rudzitis (Reviewed by John Shultis)

April 1998, Vol. 4, Issue 1

Into the Wild by Jon Krakauer (Reviewed by Marilyn Riley and Betty Warren)

Aldo Leopold: A Fierce Green Fire by Marybeth Lorbiecki (Reviewed by Alan Watson)

July 1998, Vol. 4, Issue 2

The Adirondacks: A History of America's First Wilderness by Paul Schneider (Reviewed by Ed Zahniser)

Contested Terrain: A New History of Nature and People in the Adirondacks by Philip G. Terrie (Reviewed by Ed Zahniser)

Purple Hearts and Ancient Trees: A Forester's Life Adventures in Business, Wilderness and War by Jay Gruenfeld (Reviewed by Jay O'Laughlin)

December 1998, Vol. 4, Issue 3

Zulu Wilderness: Shadow and Soul by Ian Player (Reviewed by Vance G. Martin)

Inner Passages Outer Journeys: Wilderness, Healing and the Discovery of Self by David Cumes (Reviewed by Keith Russell)

April 1999, Vol. 5, Issue 1

A Wilderness Within: The Life of Sigurd F. Olson by David Backes (Reviewed by John Shultis)

Talk and Log: Wilderness Politics in British Columbia, 1965–1996 by Jeremy Wilson (Reviewed by John Shultis)

The Wolves of Denali by L. David Mech, L. G. Adams, T. J. Meir, J. W. Birch, and B. W. Dale (Reviewed by John Shultis)

August 1999, Vol. 5, Issue 2

Wilderness by Design: Landscape Architecture and the National Park Service by Ethan Carr (Reviewed by John Shultis)

Building the National Parks: Historic Landscape Design and Construction by Linda Flint McClelland (Reviewed by John Shultis)

December 1999, Vol. 5, Issue 3

The Great New Wilderness Debate by Baird Callicott and Michael P. Nelson, eds. (Reviewed by Greg Aplet)

Shouting at the Sky: Troubled Teens, and the Promise of the Wild by Gary Ferguson (Reviewed by Keith Kilburn)

Announcements & Wilderness Calendar continued from page 43

Service took this protective step in response to a campaign led by The Montana Wilderness Association and The Wilderness Society. Conservationists throughout the West are increasingly concerned about the explosion of off-road vehicle use on public lands. Snowmobiles and all-terrain vehicles are becoming more powerful and penetrate deeper into the backcountry. Unfortunately, federal agencies have done little to address this new use, which is also creating problems at Yellowstone and elsewhere in the Northern Rockies. For more information, call (406) 586 1600.

The Wilderness Society Proposes a Forest Vision for the Next Century

"The Wilderness Society believes the time is right for a positive vision to guide forest management so that it is sustainable." Developed with guidance from distinguished scientists, foresters, and other experts, the vision aims to guide and enlighten public debate on the national forests' future.

The vision is based on five principles: (1) The integrity, health, and sustainability of wildland ecosystems shall be the goal of all management. (2) Managers shall "Do No Harm" to the forest environment. (3) Planning and management shall be based on the best available information and scientific understanding. (4) Management activities shall be economically sound and foster growth of natural asset values. (5) Citizens shall have the opportunity to participate in decision-making processes affecting their public forests.

"Few people are aware of the bounty of our national forests," says Michael Francis, director of The Wilderness Society's national forests program. "In the West, these lands supply more than half the fresh water used in homes and businesses. Nationwide, they receive three times more visitors than our national parks. A third of all our endangered plants and animals depend on these forests. Researchers rely on them to provide raw material for tomorrow's breakthrough medicines. Failure to protect these places would hurt us in many ways."

Meadows believes the vision is in keeping with what led eight forward-looking conservationists to create The Wilderness Society in 1935. "Aldo Leopold, Bob Marshall, and our other founders were ahead of their time, especially on forest issues," he says. "We intend to continue providing leadership, and this vision is the philosophical foundation of our efforts."

(Excerpted from The Wilderness Society's Quarterly Newsletter, Spring 1999, vol. I, no. 2. For more informaion, go to http://www.wilderness.org/standbylands/forests/vision.htm.)