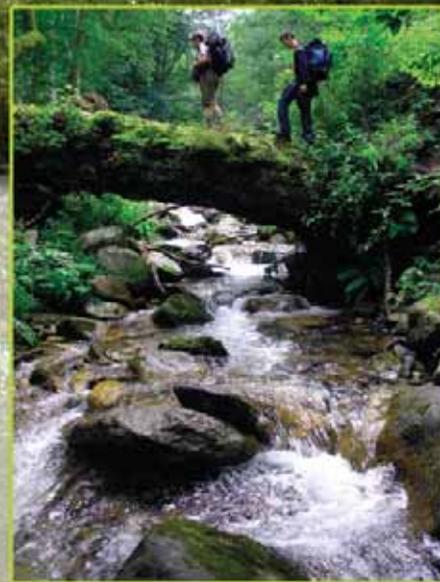


INTERNATIONAL

Journal of Wilderness



In This Issue

- Antarctic Wilderness
- Fire Policy
- Sacred Nature Sites
- Mexico, Romania, Antarctica

DECEMBER 2008

VOLUME 14, NUMBER 3

Journal of Wilderness

DECEMBER 2008

VOLUME 14, NUMBER 3

FEATURES

EDITORIAL PERSPECTIVES

- 3 *The Society for Wilderness Stewardship*
BY REBECCA ORESKES

SOUL OF THE WILDERNESS

- 4 *A Perspective on the 100th Anniversary
of the Quetico Superior Region*
BY ROB KESSELRING

STEWARDSHIP

- 7 *Pressures on the Wilderness Values
of the Antarctic Continent*
BY TINA TIN, ALAN D. HEMMING, and RICARDO ROURA

SCIENCE AND RESEARCH

- 13 *Wilderness Fire Policy in the Southwest
Advocacy Coalitions, Policy Conflict,
and Progress*
BY DAVID M. OSTERGREN and
MEGAN L. TRIPLETT

PERSPECTIVES FROM THE ALDO LEOPOLD RESEARCH INSTITUTE

- 21 *Changing Research Needs in Wilderness Fire*
BY CAROL MILLER

EDUCATION and COMMUNICATION

- 23 *Awakening Place Awareness during a
30-Day Wilderness Leadership Program*
BY GARRETT HUTSON and LUCY BAILEY

INTERNATIONAL PERSPECTIVES

- 29 *Sacred Natural Sites of Indigenous and
Traditional Peoples in Mexico
A Methodology for Inventorying*
BY GONZALO OVIEDO and
MERCEDES OTEGUI
- 36 *Ninth World Wilderness Congress in 2009*
BY VANCE G. MARTIN
- 37 *Wilderness and Wildlands in Romanian
Carpathians*
BY ERIKA STANCIU

WILDERNESS DIGEST

- 43 *Announcements
Book Reviews*
- 46 *A Handbook on International
Wilderness Law and Policy*
EDITED BY CYRIL F. KORMOS
- 47 *Taking the Air: Ideas and Change in
Canada's National Parks*
BY PAUL KOPAS

Disclaimer

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

—John C. Hendee, *IJW* Editor-in-Chief

On the Cover

FRONT: Trekkers in a middle mountain Beech forest, Gradistea Muncelului Cioclovina Nature Park in the Carpathian Mountains, Southwest Romania. The Park is known for its cultural landscapes as well as ruins of an ancient fortress and "Stonehenge" of the Dacian people. Photo © WWF-Canon/Michael Gunther

INSET: Hikers crossing a trunk bridge over a stream in Retezat National Park, Carpathian Mountains, Romania, one of the first certified PAN Parks and one of Romania's flagship protected areas. Photo © WWF-Canon/Andreas Beckmann

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.

EDITORIAL BOARD

Perry Brown, University of Montana, Missoula, Mont., USA
H. Ken Cordell, Southern Research Station, U.S. Forest Service, Athens, Ga., USA
Vance G. Martin, WILD Foundation, Boulder, Colo., USA
Rebecca Oreskes, White Mountain National Forest, Gorham, N.H., USA
John Shultis, University of Northern British Columbia, Prince George, B.C., Canada
Alan Watson, Aldo Leopold Wilderness Research Institute, Missoula, Mont., USA

EDITOR-IN-CHIEF

John C. Hendee, Professor Emeritus, University of Idaho Wilderness Research Center, Moscow, Idaho, USA

MANAGING EDITOR

Chad P. Dawson, SUNY College of Environmental Science and Forestry, Syracuse, N.Y., USA

ASSOCIATE EDITORS—INTERNATIONAL

Gordon Cessford, *Department of Conservation, Wellington, New Zealand*; Andrew Muir, *Wilderness Foundation Eastern Cape, South Africa*; Ian Player, *South Africa National Parks Board and The Wilderness Foundation, Howick, Natal, Republic of South Africa*; Vicki A. M. Sahanatien, *Fundy National Park, Alma, Canada*; Won Sop Shin, *Chungbuk National University, Chungbuk, Korea*; Anna-Liisa Sippola, *University of Lapland, Rovaniemi, Finland*; Franco Zunino, *Associazione Italiana per la Wilderness, Murialdo, Italy*.

ASSOCIATE EDITORS—UNITED STATES

Greg Aplet, *The Wilderness Society, Denver, Colo.*; David Cole, *Aldo Leopold Wilderness Research Institute, Missoula, Mont.*; John Daigle, *University of Maine, Orono, Maine*; Lisa Eidson, *University of Montana, Missoula, Mont.*; Joseph Flood, *East Carolina University, Greenville, N.C.*; Lewis Glenn, *Outward Bound USA, Garrison, N.Y.*; Gary Green, *University of Georgia, Athens, Ga.*; Glenn Haas, *Colorado State University, Fort Collins, Colo.*; William Hammit, *Clemson University, Clemson, S.C.*; Dave Harmon, *Bureau of Land Management, Washington, D.C.*; Bill Hendricks, *California Polytechnic State University, San Luis Obispo, Calif.*; Greg Kroll, *El Rito, N.M.*; Ed Krumpke, *University of Idaho, Moscow, Idaho*; Yu-Fai Leung, *North Carolina State University, Raleigh, N.C.*; Bob Manning, *University of Vermont, Burlington, Vt.*; Jeffrey Marion, *Virginia Polytechnic Institute, Blacksburg, Va.*; Leo McAvoy, *University of Minnesota, Minneapolis, Minn.*; Christopher Monz, *Utah State University, Logan, Utah*; Connie Myers, *Arthur Carhart Wilderness Training Center, Missoula, Mont.*; Roderick Nash, *University of California, Santa Barbara, Calif.*; David Ostergren, *Goshen College, Wolf Lake, In.*; Joe Roggenbuck, *Virginia Polytechnic Institute, Blacksburg, Va.*; Holmes Rolston III, *Colorado State University, Ft. Collins, Colo.*; Keith Russell, *University of Minnesota, Minneapolis, Minn.*; Tod Schimelpfenig, *National Outdoor Leadership School, Lander, Wyo.*; Rudy Schuster, *SUNY-ESF, Syracuse, N.Y.*; Michael Tarrant, *University of Georgia, Athens, Ga.*; Elizabeth Thorndike, *Cornell University, Ithaca, N.Y.*; Dave White, *Arizona State University, Tempe, Ariz.*

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

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

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

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

All materials printed in the *International Journal of Wilderness*, copyright © 2008 by the International Wilderness Leadership (WILD) Foundation. Individuals, and nonprofit libraries acting for them, are permitted to make fair use of material from the journal. 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 website: www.ijw.org.

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

Website: www.ijw.org.

Printed on recycled paper.

SPONSORING ORGANIZATIONS

Aldo Leopold Wilderness Research Institute • Conservation International • National Outdoor Leadership School (NOLS) • Outward Bound™ • SUNY College of Environmental Science and Forestry • The WILD® Foundation • The Wilderness Society • University of Idaho • 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 Leadership School (South Africa)

The Society for Wilderness Stewardship

BY REBECCA ORESKES

I've been thinking a lot lately about community. Wild, human, big, small. Social and ecological. What does it all mean? Why is it important? What are my communities?

One of my communities is, of course, tied to wilderness and all of the people around the world who read the *International Journal of Wilderness*. Every reader is connected to one another even when we've never met, or talked with one another.

At least since the 1990s, small groups of wilderness stewards, researchers, and advocates have had the idea of creating an organization that would tie us all together even more. A professional organization for wilderness, just as foresters, engineers, and many other disciplines have organizations designed to meet their needs. After many discussions, informal meetings over dinners and drinks, a 2003 article in the *IJW*, conference calls, and lots of hard work by a dedicated few, the Society for Wilderness Stewardship was born.

The Society for Wilderness Stewardship mission is "to advance the profession of wilderness management, science, education, and stewardship to ensure life-sustaining benefits of wilderness."

The society "will provide access to research, policy information, and practical tools, along with vibrant professional networks to ensure that current science and best management practices are applied to wilderness issues."

If you haven't yet seen detailed information about the society, stay tuned.

As much as I'm interested in community, I don't count my self among those who like to join clubs or organizations. I'm usually happy muddling through on my own with a few good mentors to guide and teach me. So, why am I excited by the thought of a professional wilderness organization?

For one thing, it's nice to imagine a group that can truly tie together researchers, managers, businesses, non-governmental organizations, and individuals who all want the best stewardship for wilderness. We each have our individual networks, sources of information, and people we turn to for help, but we lack a cohesive organization to which we can all belong, and through which we can all become better stewards.

One of the common complaints of wilderness managers is that lots of groups advocate for new wilderness, but fewer groups are willing to help out with the day-to-day management of existing wilderness. Having an organized body dedicated to wilderness stewardship may help us find those who are willing to help out. Maybe most importantly, a professional society will give wilderness managers and stewards a shared voice. Many voices organized into one can help us all be heard. One shared voice can help us to build active and critical support.

I haven't totally figured out what a community is or what it really means to be part of one. I do know it means having a connection. I'm glad that the people behind creating the Society for Wilderness Stewardship were interested in further connecting all of us. I hope each of us will be a part.

In this issue of the *IJW* authors report about international concerns over maintaining wilderness conditions and values in Antarctica, Mexico, and Romania; they assess U.S. wilderness fire policy in the southwestern region; and they evaluate development of place awareness in wilderness leadership courses.

REBECCA ORESKES serves on the *IJW* editorial board and is the public services staff officer on the White Mountain National Forest in Laconia, New Hampshire, USA; email: roreskes@fs.fed.us.

A Perspective on the 100th Anniversary of the Quetico Superior Region

BY ROB KESSELRING

If the entire human history of North America was compressed into one year, a century would be the equivalent of a single day. Geologic time is even more absurd; a century would be just a blink of an eye. Even so, if the rocks of the Quetico-Superior Region could talk, they would remark that the last hundred years have been a memorable blink.

Next year will mark the 100th anniversary of the initial formation of what was to become Quetico Provincial Park and the Boundary Waters Canoe Area Wilderness (BWCA). In 1909, a jagged process of preservation and restoration began that has resulted in a huge, roadless, and protected forest smack in the middle of the North American continent. It has become a treasured spot chosen annually by hundreds of thousands of canoeists, anglers, skiers, hikers, and campers as a site to explore, relax, and find adventure. It has become a place where many children get their first taste of life away from video images, concrete, and wall-to-wall carpeting. Maybe most importantly, it persists as a sanctuary of biodiversity. Two thousand and nine will be a year for celebration.

It would be reassuring to believe that this area, so loved, exists as it always has and will continue in its present form to a time without end. A naive canoeist of today might believe that 100 years ago a visionary explorer gasped at the beauty of the region and proclaimed, without objection, that this place be set aside from development and preserved for future generations. That same canoeist might even grumble on a crowded August portage, wishing he could step in a time machine and go back 100 years.

If he did go back in time he might be unpleasantly surprised. His portage would be choked with second-growth timber and his skyline scarred by burned-over slash. Most of the forest in what is now the BWCA had been clear-cut. The

woods and swamps would be devoid of moose, which were being relentlessly pursued 12 months a year by hunters hired by the timber camps. Beavers were all but exterminated a century earlier and the time traveler would discover even in the most remote corners of the park evidence of careless prospecting with picks and shovels. He might have wet feet, because, without any concern for ecological

consequence waterways were dammed to facilitate the floating of logs. If he was north of the international border he might have been standing in the shade of old-growth timber, but not because the Canadians were any more gentle on the Earth. Rather, it was because moving logs north out of the Quetico region was more bother than it was worth. The flora and fauna of the region, even the unique mosaic of lakes and interconnected waterways, was imperiled. Concepts such as “pristine,” “timeless,” and “untouched,” although applied to the Quetico-Superior region even to this day, have for well over a hundred years been based more on fantasy than reality.

By a stroke of geologic luck, the rich iron ore deposits had formed just south of the region and the easily accessible lumber was already stripped from the land, so there was little opposition when 77-year-old Minnesota forestry commissioner Christopher Andrews convinced the U.S. government to protect and manage the American side. Ontario citizens,



Author photo: Rob Kesselring.

appalled by the demise of the moose, joined the effort in 1909, creating a unique international partnership, national on one side, provincial on the other, forest-focused on one side, wild-life-focused on the other. It was a rickety start to 100 years of gradually increasing protection, contentious debates, and an improving environment. Although he experienced Quetico-Superior at its worst, Andrews was the first of many to sense the magic of this land and to find the passion to defend and protect it.

But the permit system, the ban on bottles, even the concepts of conservation and wilderness were not formulated in 1909. The first 50 years in this region consisted of a rapidly growing tourist industry that through 21st-century-eyes would appear antithetical to our current definition of wilderness. By 1944, the guest capacity of the 16 resorts on Basswood Lake exceeded a thousand, and there was daily mail service, several private cabins, double-decker houseboats, and widespread use of outboard motors. Boats were cached at and clogged both sides of portages, green trees were chopped down for tent poles, and pine boughs were cut for wilderness bedding. Empty cans and bottles were strewn about and into the lakes. Wilderness activist and, ironically, also Basswood Lake cabin owner Frank Hubachek counted 38 flights of pontoon-equipped aircraft flying low over his cabin on a single day in 1946. In 1951 people were observed water-skiing on Knife Lake. Indiscriminate fish stocking was the norm. Non-endemic

fish were introduced and even heralded by staunch wilderness supporter Sigurd Olson. Twenty million fish were stocked in the Superior National Forest in 1936 alone. But gradually, through acquired knowledge and the persistence of dedicated conservationists such as Ernest Oberholtzer and progressive conservation organizations on both sides of the border, laws were passed, inholdings were bought out, and airplanes and outboard motors were restricted. Despite an ever-increasing number of annual visitors, by many measures the quality of the wilderness environment in the Quetico-Superior region continued to improve. But even these evolving ethics and actions did not come smoothly. As the years went by, attitudes about wilderness and development polarized, often pitting local residents against outside interests.

The passages of the Wilderness Act in 1964 followed by the contentious BWCA Act in 1978 were major steps but not the culmination of wilderness preservation in the Quetico-Superior region. This two pieces of legislation created a philosophical framework around which regulation and policy has grown to create the special level of protection this area receives today.

In Canada, the Quetico Park management plan has been modified to permit First Nations people motorized and airplane access to certain lakes as part of an economic development scheme and to compensate for past injustices. In an effort to reduce the likelihood of the introduction of exotic

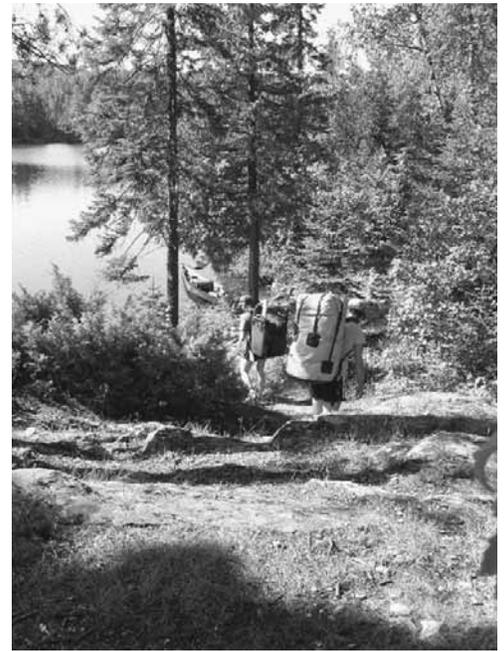


Figure 1—Portaging in the Boundary Waters Canoe Area Wilderness of Minnesota. Photo by Rob Kesselring.

species to Quetico lakes, in 2008 a regulation took effect that would have been unimaginable 50 years ago, banning the use of live bait for fishing.

One hundred years is an important span of time. Maybe because it is as long as a human can optimistically hope to live. Maybe it's just because 100 of anything, even sit-ups, seems significant. Whatever the reason, a hundredth anniversary is an opportunity to look back and to plan ahead. Protection, natural regeneration, no-trace camping, and the evolution of environmental regulations combined with new camp gear technology has resulted in better-than-ever wilderness camping experiences in the Quetico-Superior region. It has become a premier canoeing destination for paddlers from around the world. Although it is impossible to predict what will happen in the next 100 years, it is possible to influence the future. New challenges include: the shifting cultural norms on what wilderness preservation means, invasive species, climate change, homeland security, aboriginal

It would be reassuring to believe that this area, so loved, exists as it always has and will continue in its present form to a time without end.



Figure 2—Paddling with family and friends in the BWCA. Photo by Rob Kesselring.



Figure 3—Protection of Boundary Waters Canoe Area Wilderness and Quetico Provincial Park began in 1909. Photo by Rob Kesselring.

The biggest threat to the work accomplished to restore and preserve the Quetico-Superior wilderness is complacency.

land rights, pollution, and increasing human demands for energy, water, raw materials, and recreational land use. Will the Echo Trail be replaced with a tram and a bikeway? Will loons disappear? Will caribou come back? Will a casino be built on Lac la Croix? Will portions of the wilderness be set aside for “fair-means” travel, prohibiting cell phones, GPS, and petrochemicals including nylon and Kevlar? Will axes and campfires be banned? Will picnic tables and Wi-Fi be provided?

The biggest threat to the work accomplished to restore and preserve the Quetico-Superior wilderness is complacency. As we celebrate we must also activate, because for certain, the next century holds great promise, great challenge, and many changes. IJW

Acknowledgment

Reprinted with permission from the summer 2008 *Wilderness News* of the Quetico-Superior Foundation.

ROB KESSELRING leads staff development workshops for schools, organizations, and companies nationwide (website: uncommonseminars.com); he is an avid canoeist and the author of two books: *Daughter Father Canoe: Coming of Age in the Sub-Arctic* and *River Stories*; website: www.robkesselring.com.

Pressures on the Wilderness Values of the Antarctic Continent

BY TINA TIN, ALAN D. HEMMINGS, and RICARDO ROURA



Tina Tin



Alan D. Hemmings



Ricardo Roura

Wilderness and the Antarctic

Antarctica is governed internationally by the Antarctic Treaty System (ATS). Under the ATS, wilderness values are recognized by the Protocol on Environmental Protection to the Antarctic Treaty (the “Protocol”), which designates Antarctica as “a natural reserve, devoted to peace and science,” and stipulates that:

The protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, in particular research essential to understanding the global environment, shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area. (Article 3[1])

This article focuses on the obvious direct pressures of human presence on the wilderness values of Antarctica. The human presence on the Antarctic continent arises from the two dominant activities of science and tourism. We focus on the area covered by the Antarctic Treaty and the Protocol, the

continent and islands south of 60°S. Pressures on wilderness values in the Antarctic marine environment also exist, but they merit a detailed, stand-alone treatment.

There is no formal definition of wilderness or wilderness values in the Protocol or anywhere else in the ATS. Within the ATS, wilderness is used in two significantly different ways: (1) loosely, as an essentially political assertion about the state of the Antarctic environment as a whole; and (2) in a narrower technical sense as a value to be taken into consideration in environmental management under the Protocol. However, a review of discussions and documents under the ATS suggests a general understanding on the key attributes of wilderness as being remoteness and a relative absence of both people and indications of past and present human presence or activity (ASOC 2006).

As a result of its extreme isolation from human settlements, Antarctica has remained the last great continental wilderness. This isolation, however, has been progressively eroded over two centuries and has declined in the past few decades (Hemmings 2007). Antarctica had no indigenous population, and human presence on the continent began

The human presence on the Antarctic continent arises from the two dominant activities of science and tourism.

only in the 1820s with the first seal hunters. Since then, Antarctica has been the subject of successive waves of activity such as exploration, hunting of marine mammals, fishing, science, and tourism. Tensions over territorial claims and the legal status of the area were eventually addressed through the adoption of the 1959 Antarctic Treaty that established an international regime of governance.

Two hundred years of intermittent human presence has left physical evidence in the Antarctic landscape, marking the boundary of civilization and the encroachment upon the last great wilderness—conforming, in effect, to an Antarctic frontier (Roura 2008a).

The Significance of the Antarctic Wilderness

Nowhere else on Earth is there such a vast area with so little evidence of human presence. Antarctica, a wilderness continent managed internationally, and where peace, science, the environment, and the interest of humankind are primary declaratory concerns, is not only a unique feature on our planet, but can serve as a powerful symbol for the rest of the world. It offers a potential realization of a human ideal: living and working together in peace and collaboration, pursuing activities not just for personal or national profit but for the benefit of humankind. Diversity is celebrated in the collaboration of different peoples and through the fact that the human habitation of this seventh continent is predicated on different norms from habitation on the other six (Rolston 2002). Humans have the opportunity

to leave only light and transitory footprints, exercise humility, and refrain from molding the land into the image of what they think it should be (Cole 2005). The Antarctic wilderness is much more than just a symbol (Keeling 2007). It is an objective reality, with expanses of mountains, valleys, and an ice plateau where there may never have been any human presence, permanent or transitory, and home to many organisms found nowhere else in the world.

Despite its outstanding size and integrity, the Antarctic wilderness is not inviolable. The natural ramparts of Antarctic defense against human intrusion are being broken down by technology and the pressures of globalization (Hemmings 2007). Without a clear definition under the ATS, the concept of wilderness has often been considered as too complex or philosophical to be applied in practice (Bastmeijer 2007). Hence, the immense Antarctic wilderness is extremely vulnerable to creeping degradation where the effects of multiple small decisions over time accumulate to result in its penetration, fragmentation, and erosion (Landres et al. 2005).

At the beginning of the 21st century, the Antarctic wilderness is facing an ever-evolving set of pressures. Scientific research and its associated infrastructure and logistics have been the dominant human activity in Antarctica over the past five decades. They are giving way to tourism as the fastest-growing and most populous activity. Exploitation of living resources has extended from seals, whales, and fish to the search for commercially valuable chemical products and genetic

materials. This potentially lucrative business, referred to as bioprospecting, is likely to be a powerful factor for further human penetration of the Antarctic wilderness as it drives research into remote environments with interesting biology (Hemmings and Rogan-Finnemore 2008). Advances in technological capabilities, increased mobility, and wealth of people and changes in market conditions are making Antarctica more attractive and more accessible to the global population.

Science and Associated Logistics

Scientific research and its associated infrastructure and logistics are the source of most of the human-made features found in the Antarctic wilderness. These include research stations, roads, field huts, depots, airfields, waste dumps, and fuel-contaminated areas. There are currently 64 operating research stations providing a peak simultaneous capacity for approximately 4,000 people in the summer. Thirty-seven of these provide a simultaneous capacity of around 1,000 people year-round. These numbers reflect stations that are operational and do not include inactive stations or abandoned worksites. Although a few inactive facilities have been removed or cleaned up since the Protocol entered into force in 1998, many have not, and new stations are being built, albeit at a lower rate than in recent decades (ASOC 2004).

Ease of access has been an important determinant of station location. As a result, most stations are located on or near the coast, in order to facilitate resupply by ship, and half of them are on the Antarctic Peninsula, the part of the continent that is closest to another continent. Most stations are located on ice-free ground, which makes up less

than 0.34% of the surface area of the Antarctic continent (BAS 2004), and is important habitat for seals, seabirds, and terrestrial fauna and flora. Competition for limited ice-free ground in coastal areas creates significant pressure on the ecosystem and the wilderness values of the coastal margins.

In comparison, human and biological activity on the polar plateau is low. Algae, lichens, and bacteria exist on gravel soils, bare rock, and snow surfaces, or in fissures and crystal boundaries of rocks. For nearly 40 years, there were only two permanent research stations on the plateau. Since 1995, three new research stations have been built, with another being developed. As technology allows greater penetration of the continent, we move to a new phase of challenge for the Antarctic wilderness. Now the remotest places in Antarctica, and hence of the planet, are being reached by air and surface. Vehicles traveling over hundreds of kilometers of marked routes that sometimes require dynamiting and crevasse filling—de facto roads—provide access to remote inland stations. Infrastructure is established deeper into the Antarctic continent, becoming jump-off points for even deeper plateau penetration (ASOC 2006). In the next year or so, scientists may complete drilling through 4,000 meters (13,123 ft.) of glacier ice on the plateau, reaching lakes that have been isolated from the Earth's atmosphere for more than 1 million years (Schiermeier 2008). Because of the paucity of biota in the deep interior of Antarctica, and conventional norms around human interests and economic valuation, it is hard even to get recognition that wilderness is challenged, which in turn allows the world's largest contiguous wilderness to be fragmented and eroded as a result of a multitude of

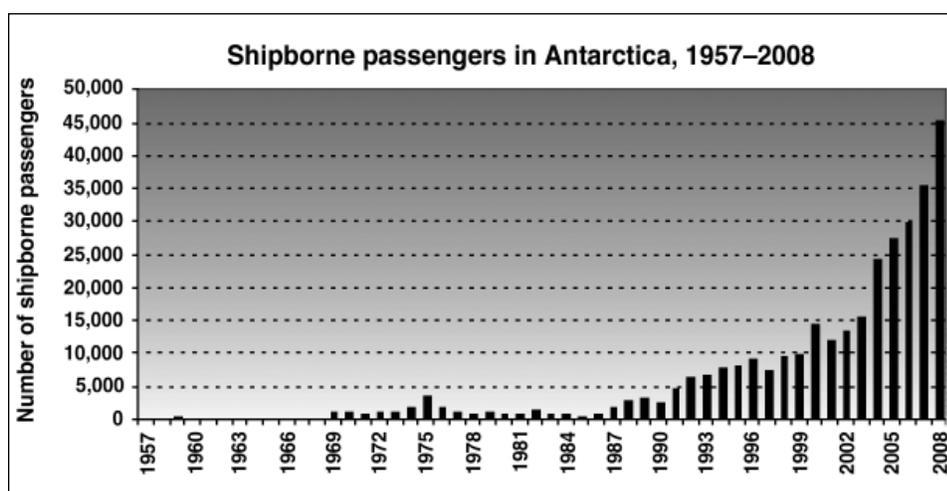


Figure 1—Number of seaborne tourists participating in commercial tourism operations. This includes passengers on large ships (>500 passengers), standard ships, and yachts, whether landing or not (Data Source: Tracey 2001 and IAATO 2008a).

uncoordinated development decisions.

As a result of the ongoing International Polar Year—an international research initiative that goes from March 2007 to March 2009—research and its associated logistics are expected to intensify around existing centers of research. A number of large-scale research activities have been planned in areas that have been hitherto seldom accessed, often as precursors to long-term programs and permanent infrastructure (Tin and Roura 2007). On the one hand, the widespread use of numerical modeling techniques and remote sensing platforms such as satellites to obtain data is likely to reduce the footprint of science and logistics in Antarctica in the modern age. On the other hand, increasing commercial interests in resources are likely to spur further scientific research. In addition, large-scale and prestigious scientific endeavors, where human ability to overcome natural obstacles is a matter of personal, institutional, or national pride, are not likely to disappear. Although attitudes and practices toward environmental protection have changed and improved in many ways over the past 50 years, future scientific pursuits, spurred on by commercial interests and

technological advances are likely to continue to penetrate deeper into the remotest places on Earth.

Rising Tourism

Following on from earlier activities, polar tourism represents a contemporary phase in the exploration and exploitation of the polar regions. Polar tourism has increased significantly over the past few decades and is characterized by growth, diversification, and geographic expansion (Roura 2008b).

In the 2007–2008 season, more than 30,000 tourists landed on the Antarctic continent (IAATO 2008). In the last 10 years, tourist numbers have increased by nearly fivefold. Projections suggest that the upward trend will continue (see figure 1). Tourism is now the largest Antarctic activity in terms of people involved. More than 95% of tourist visits and landings take place on the Antarctic Peninsula, with the 20 most popular sites experiencing more than 75% of all landings in Antarctica (IAATO 2008). Visited sites are often ice-free, usually biologically rich or otherwise have outstanding aesthetic, wilderness, historic, or scientific value, or a combination of values. Until the 1990s, ship-based tourism in



Figure 2—Expanding infrastructure in support of scientific research and rising tourism are the key direct pressures on the wilderness values of the Antarctic continent. The United States' McMurdo station is the largest research station and has a maximum capacity for 1,000 people (upper photo by Nadine Newton), and Pendulum Cove on Deception Island is one of the most popular tourist destinations (lower photo by Ricardo Roura).

Antarctica was conducted on small and medium-sized vessels, with a focus on wildlife, scenery, and cultural heritage (Bastmeijer and Roura 2004). This is now changing with larger vessels entering the market. The largest tourist vessel (indeed the largest vessel of any kind) to operate in Antarctic waters was introduced in the 2006–2007 season. The *Golden Princess* carried 3,700 persons, constituting the single largest human activity in Antarctica during the season (Hemmings 2006).

Up to 300 sites have been used for tourism purposes since records began,

and between 100 and 200 sites are visited every year. On any given day during the tourist season, 3,000 tourist landings may take place. Paths, cairns, interpretation signs, and tourism management or support infrastructure constitute lasting evidence of tourism activities (Roura 2008b). Frequent, organized tourism landings have effectively turned some sites into what can be described, in the Antarctic context, as mass tourism destinations. There, the sounds and sights of high ship traffic and simultaneous human presence, and the mediated characteristics of the expe-

rience, remove the possibility of solitude, a sense of the vast and unknown, and the feeling of a true wilderness.

Although most tourists currently travel to Antarctica by ship, there is an ongoing transition toward a greater component of air-supported tourism as well as land-based visitor accommodation ashore (Bastmeijer and Roura 2004). One-day trips to Antarctica are now available. The types of commercially available activities are diversifying: they include overflights, helicopter excursions, skiing expeditions, mountain climbing, snowboarding, kayaking, marathons, and scuba diving (Hemmings 1997). Activity-based use of destinations is becoming more important than the attractions of some frequently visited historic sites (Roura 2008b). Large cruise liners provide a wide range of activities onboard, encouraging a relatively new form of tourism in which Antarctica is no longer the main attraction of the voyage but serves as background for events and entertainment, such as weddings, casinos, and dining and sporting opportunities. Wilderness expeditions—self-sufficient and non-motorized—have long been part of the tradition of polar exploration. The South Pole itself has become a popular destination for specialized expeditions. A recent diversification has seen expeditions that aim to reach the South Pole by driving motor vehicles.

The developments in the Antarctic tourism industry are manifestations of a worldwide trend, where a wealthier and more mobile global population is searching for increasingly remote areas as vacation destinations. Tourism developments over the past decades and the worldwide trend suggest that the rate of increase of Antarctic tourism will not reduce, depending on global economic conditions.

Conclusions

Over the past decades, Antarctica has become more accessible to the global population, and the amount and variety of human activities have continued to rise. Technology has breached the ramparts of Antarctica's natural defenses. Scientists and their supporting logistics are penetrating further into areas that have been hitherto seldom accessed. An increasing number of tour operators, ships, and tourists visit the region to carry out an ever-increasing range of activities. The human footprint in Antarctica has been rapidly expanding, and all evidence suggests that the trend will continue and escalate.

As the most pristine continent left on Earth, human presence in Antarctica inevitably leads to some impacts on its wilderness values, whether transitorily or permanently. Loss of wilderness values is sometimes balanced by benefits to humanity, for example, through globally important research or the protection of cultural heritage. However, not all Antarctic science is significant, not all remains of past activities merit protection, and not all activities that take place justify their impacts on the Antarctic wilderness.

Compared to wilderness areas in other parts of the world, Antarctica is vast and isolated. Some may argue that the areas of human influence are of little or no consequence, and that human activities can continue to expand without significantly reducing the size or value of the Antarctic wilderness. However, we argue that the uniqueness of the Antarctic wilderness lies in its extreme vastness and isolation. Nowhere else on Earth is there such a large area that has been so isolated from the effects of civilization. The immensity and integrity of the Antarctic wilderness should not be used to justify its attrition. Instead,



Figure 3—Although Antarctica is home to abundant and unique wildlife such as the emperor penguin (upper photo by Frank S. Todd), more than 99% of the continent is permanently covered in snow and ice (lower photo courtesy of ASOC's collection) and has little biological activity, making it difficult to get recognition that wilderness is challenged.

these qualities should be maintained as a symbol of humanity's willingness to cohabit in peace, to work together in the interest of humankind, and to exercise "an intelligent humility towards its place in nature" (Leopold 1987). If humanity is willing, then nowhere will it be easier to demonstrate this than on the most remote continent still left on our planet. To preserve the world's last great wilderness requires concerted international collaborative efforts and a fundamental shift to accepting humanity as a fellow

member, and not the master, of nature's community. IJW

References

- ASOC, Antarctic and Southern Ocean Coalition. 2006. Beyond direct impacts of multi-year maintained ice routes. Case study: McMurdo-South Pole surface re-supply traverse. *Information Paper 85* for XXIX Antarctic Treaty Consultative Meeting, Edinburgh, UK, June 12–23, 2006.
- . 2004. Development pressures on the Antarctic wilderness. *Information Paper 74* for XXVIII Antarctic Treaty Consultative Meeting, Stockholm, Sweden, June 6–18, 2005.

The human footprint in Antarctica has been rapidly expanding, and all evidence suggests that the trend will continue and escalate.

- BAS, British Antarctic Survey. 2004. Antarctica 1:10 000 000 map. BAS (misc.) 11. Cambridge, U.K.: British Antarctic Survey.
- Bastmeijer, C. J. 2007. Special offer—7 days fly and drive Antarctica: The role of wilderness protection in deciding whether (semi) permanent tourist facilities in Antarctica should be prohibited. In *Science and Stewardship to Protect and Sustain Wilderness Values: Eighth World Wilderness Congress Symposium, September 30–October 6, 2005, Anchorage, Alaska*, ed. A. Watson, J. Sproull, and L. Dean (p. 190-195). Proceedings RMRS-P-49. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Bastmeijer, C. J., and R. Roura. 2004. Regulating Antarctic tourism and the precautionary principle. *American Journal of International Law* 98: 763–81.
- Cole, David N. 2005. Symbolic values: The overlooked values that make wilderness unique. *International Journal of Wilderness* 11(2): 23–27, 10.
- Hemmings, A. D. 2007. Globalisation's cold genius and the ending of Antarctic isolation. In *Looking South: Australia's Antarctic Agenda*, ed. L. K. Kriwoken, J. Jabour, and A. D. Hemmings (176–90). Leichhardt: The Federation Press.
- Hemmings, A. D. 2006. Antarctica's tourism peril. In *The Advertiser Review—The Big Picture: World in Focus* (October).
- Hemmings, A. D. 1997. Antarctica in transition. *Forest and Bird* 284: 38–44.
- Hemmings, A. D., and M. Rogan-Finnemore. 2008. Access, obligations and benefits: Regulating bioprospecting in the Antarctic. In *Biodiversity Conservation, Law and Livelihoods: Bridging the North-South Divide*, ed. M. I. Jeffery, J. Firestone, and K. Bubna-Litic (529–52). Cambridge.
- IAATO, International Association of Antarctica Tour Operators. 2008. IAATO overview of Antarctic tourism. 2007–2008 Antarctic season and preliminary estimates for 2008–2009 Antarctic season. *Information Paper 85* for XXXI Antarctic Treaty Consultative Meeting, Kyiv, Ukraine, June 2–13, 2008.
- Keeling, P. M. 2007. Beyond symbolic value of wilderness. *International Journal of Wilderness* 13(1): 19–23.
- Landres, P., S. Boutcher, L. Merigliano, C. Barns, D. Davis, T. Hall, S. Henry, B. Hunter, P. Janiga, M. Laker, A. McPherson, D. S. Powell, M. Rowan, and S. Sater. 2005. *Monitoring Selected Conditions Related to Wilderness Character: A National Framework*. Gen. Tech. Rep. RMRS-GTR-151. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station.
- Leopold, A. 1987. *A Sand County Almanac, and Sketches Here and There* (originally published 1949). New York: Oxford University Press.
- Rolston III, H. 2002. Environmental ethics in Antarctica. *Environmental Ethics* 24: 115–34.
- Roura, R. 2008a. Antarctic scientific bases: Cultural heritage and environmental perspectives 1983–2008. In *The Protection and Preservation of Scientific Bases in the Polar Regions*, ed. S. Barr and P. Chaplin. Oslo, Norway: International Polar Heritage Committee (IPHC).
- . 2008b. Cultural heritage tourism in Antarctica and Svalbard: Patterns, impacts, and policies. In *Tourism and Change in the Polar Regions: Climate, Environment and Experiences*, ed. M. Hall and J. Saarinen.
- Schiermeier, Q. 2008. Russia delays Lake Vostok drill. *Nature* 454: 258–59.
- Tin, T., and R. Roura. 2007. Enhancing the environmental legacy of the IPY in the Antarctic. *Geophysical Research Abstracts* 9: 02042.
- Tracey P. J. 2001. *Managing Antarctic tourism*. PhD dissertation, Hobart, Australia: University of Tasmania.
- TINA TIN, Ph.D., is a freelance environmental consultant and is an advisor to the Antarctic and Southern Ocean Coalition (ASOC); BP 80358, 45163 Olivet, CEDEX 3, France; email: tinatintk@gmail.com.
- ALAN D. HEMMING, Ph.D., is a senior fellow at Gateway Antarctica Centre for Antarctic Studies and Research, University of Canterbury, New Zealand and research associate in the Institute of Antarctic and Southern Ocean Studies at the University of Tasmania, PO Box 5225, Garran, ACT 2605, Australia; e-mail: ahe30184@bigpond.net.au.
- RICARDO ROURA is a doctoral researcher at the Arctic Center, University of Groningen, The Netherlands, and senior advisor to ASOC; Arctic Centre, University of Groningen P.O. Box 716, 9700 AS Groningen, The Netherlands; email: ricardo.roura@worldonline.nl.

Wilderness Fire Policy in the Southwest

Advocacy Coalitions, Policy Conflict, and Progress

BY DAVID M. OSTERGREN and MEGAN L. TRIPLETT

Abstract: Reintroducing fire into wilderness is both a technical and philosophical challenge. The struggle centers on creating both more natural and more untrammelled conditions. This investigation utilizes case study methodology to analyze the current policy debate about how to reintroduce fire into wilderness. The authors apply the Advocacy Coalition Framework to opinions and perceptions of managers, wilderness advocacy leaders, and researchers. We find three coalitions that advocate a range of policy preferences. Our conclusion is that either one policy will dominate, or a consistent policy will emerge that attempts to balance the coalitions' concerns.

Introduction

In the early 20th century, fire was perceived as the primary threat to our nation's forests (Pyne 1982). Ironically, now the lack of fire poses a major threat in wilderness restoration by setting up conditions for unnaturally severe results (Landres et al. 2001). Facing this wilderness dilemma, should humans: (1) pare down dense stands with mechanical means before introducing fire, (2) set prescribed fires and only allow lightning fires to burn in the cooler months, or (3) stand back and watch areas burn whenever and wherever nature dictates?

The role of fire in forest ecosystems is not a new debate (Pyne 1982). The role of managers reintroducing fire into national parks and wilderness has been thoroughly discussed also (e.g. see Heinselman 1978; Bonnicksen 1985; Christensen 1995; Cole 1996; Cole and Landres 1996; Worf 1997; Cole 2000; Parsons 2000; Graber 2003; Ostergren 2006a). As codified in U.S. policy, ecologists, nongovernmental organizations (NGOs), and land managers all recognize the need to return fire to the landscape (NIFC 2001). Yet a relatively small proportion of fire starts are allowed to burn every year in wilderness (Parsons 2000; NIFC 2007).

This analysis uses the advocacy coalition framework to map historic changes in wilderness fire policy and describe current coalitions and philosophies. We illustrate the debate with conditions in southwestern ponderosa pine wilderness



David M. Ostergren.

Megan L. Triplett.

in the USDA Forest Service (USFS), the Bureau of Land Management (BLM), and undesignated backcountry areas in the National Park Service (NPS) that are, by policy, managed as wilderness areas. We focus our case studies on southwestern ponderosa pine ecosystems because nearly all stakeholders agree that fire needs to return to these ecosystems, and three of the four U.S. wilderness agencies are represented there in a relatively small geographic area.

Advocacy Coalition Framework

The advocacy coalition framework (ACF) is designed to explain policy changes that happen over a decade or more

PEER REVIEWED



Figure 1—Powell Plateau is a very remote area in the Grand Canyon National Park with a relatively untrammelled *and* natural ponderosa pine stand—too far away for fire suppression. Photo by David M. Ostergren.

(Sabatier 1993). As agency personnel, elected officials, representatives from NGOs, researchers, and industry representatives advocate for policies that line up with their individual beliefs, they can be grouped into advocacy coalitions (ACs). Coalitions share a set of basic values, causal beliefs, and perceptions of problems that cut across professional boundaries and show a significant degree of coordinated behavior to realize their objectives (Sabatier 1998). The behavior ranges from introducing legislation, to writing in journals, to advocating for a particular policy in meetings with colleagues. Eventually one policy preference dominates and is implemented. The ACF facilitates our understanding of the policy process and

provides insight into possible future trends in a policy arena.

The ACF assumes that individuals have a set of deep core beliefs applicable to all policy positions that are not susceptible to change (e.g., humans are part of nature vs. humans are separate from nature). Within coalitions in a policy arena, a shared set of policy beliefs constitute the “policy core.” These are fundamental policy positions that apply to the policy subsystem and may change only with difficulty and in the face of serious anomalies (Sabatier and Jenkins-Smith 1999). Next are the “secondary aspects” that pertain to the administrative or legislative mechanisms that implement the policy core. These positions, rules, actions, and interpreta-

tions are subject to change with time as conditions change, new information emerges, and the ACs revise strategies to advocate their policy by building alliances, generating political support, or capitalizing on events (Sabatier 1993).

A significant contribution to change, “policy-oriented learning,” occurs when coalitions “alter policy core aspects of their belief system—or at least very important secondary aspects—as a result of observed dialogue” (Jenkins-Smith and Sabatier 1993, p. 48). Learning is a function of: (1) the level of conflict and degree of incompatibility between coalitions, (2) the analytical tractability and uncertainty of the issue and whether coalitions can agree on the nature of

the problem, and (3) the presence of a professional forum where participants all agree the status quo is unacceptable. As coalitions learn from one another they change their strategies and tactics to fulfill new policy core beliefs sometimes closer to the opposition and sometimes more firmly entrenched in their position. The ACF has been used to explain long-term change in several natural resource policy areas (e.g., Davis and Davis 1988; Burnett and Davis 1999; Pralle 2003).

We use the ACF as a lens to investigate long-term changes in wilderness fire policy. Our hypothesis is that we can identify ACs that seek to influence wilderness fire policy preferences. We identify core policy beliefs that have changed for actors over the 20th century, first in fire policy and later in the policy nexus of wilderness and fire.

Methods

Our analysis investigates how society arrived with this suite of policy preferences, each with unique advantages and constraints. We used three sources of data: (1) written documents including peer-reviewed literature, current policy documents, and archival records; (2) 52 structured open-ended interviews and 34 unstructured, open-ended interviews with policy elites, including federal land managers and researchers from the USFS, BLM, NPS, U.S. Geological Survey, and academia, as well as policy makers in regional and national NGOs; and (3) personal observations of field conditions.

We used a snowball sampling technique whereby early interviewees identified subsequent interviewees. It is a systematic method enabling the researcher to target a difficult-to-reach population (Atkinson and Flint 2001). Primary data were collected between May 2005 and July 2006. Interviewees were assured of their anonymity and

We need a policy that prevents catastrophe and creates more wild, more untrammelled, more natural areas for future generations to cherish.

thus we report our data in aggregate and, where appropriate, use unattributed quotes. A structured interview followed a set of questions to assure that a consistent set of data was collected. The open-ended nature of the interviews allowed the interviewee to guide the discussion to important issues or technical considerations that are outside the expertise of the researcher or other interviewees. We transcribed interview notes shortly after the interviews and conducted subsequent analysis by searching for trends in policy preferences (Johnson and Joslyn 1995; Jensen and Rodgers 2001). Follow-up questions by email or phone provided an opportunity to clarify positions or seek new information.

Analysis was conducted by identifying consistent themes that contain similar language or clear policy preferences. For instance, all parties agreed that road building and industrial thinning are not options for wilderness areas. Another example is that as interviewees discussed fire history, we had to make the distinction between prescribed natural fire (allowing lightning strikes fire to burn), prescribed fire (fire ignition by humans for resource benefit), and Wildland Fire Use (WFU—allowing lightning strikes fire to burn to accomplish specific resource management objectives). All these terms have consistent interagency definitions.

Other terms were inconsistent. For instance, the phrase *mechanical thinning* required clarification because among some NPS staff it meant that chainsaws are allowed to create fire lines, but no skidders or bulldozers.

Mechanical for wilderness advocacy groups meant the use of any type of motor, for any reason. As one individual advocated a policy preference on mechanical thinning, we asked follow-up questions to clarify the exact meaning of *mechanical thinning*. Our interviews revealed a complex discourse colored by law and deep-seated philosophy, and amplified by the escalating costs to suppress larger, more frequent and intense wildfires.

Results

A Foundation in Fire Policy

The literature revealed a relatively straightforward dichotomy on fire policy in the first half of the 20th century, and a more complex discussion on fire in national parks and wilderness since the 1960s. Fire policy during the 20th century evolved from a philosophy of full suppression to cautious acceptance. Despite a small contingency of foresters who unsuccessfully lobbied to maintain frequent, low-intensity fire, the USFS and NPS formalized full fire suppression in the wake of the 1910 fire season (Pyne 1982; Busenberg 2004; Stephens and Ruth 2005; Rothman 2007). With an influx of men and equipment after WWII, federal agencies escalated the frequency and effectiveness of fire suppression. Meanwhile, a relatively small, persistent coalition advocated for the role of low-intensity, frequent fire in many national forests. Their voices were drowned by a culture of fire suppression and a sincere belief that fighting fires was good for forests.

In 1963, the Leopold Report highlighted the necessary role fire

should play in maintaining healthy ecosystems (Leopold et al. 1963). Also, the 1964 Wilderness Act shed new light on preserving wild nature that implicitly included ecosystem function, process, and species composition (P.L. 88-577). One of the most conspicuous and powerful processes missing on the landscape was fire. Partially in response to the 1963 Leopold Report, in 1968 the NPS changed administrative policy to allow prescribed fire as a natural resource management tool (NPS 1969). The NPS started implementing the new policy in Kings Canyon and Sequoia National Parks and soon emerged as a leader in prescribed fire (Kilgore and Briggs 1972; van Wagtenonk 1991). In 1978, the USFS changed its policy to allow for prescribed natural fires (i.e., lightning-caused fires) in wilderness (Arno and Bunnell 2003).

By the 1990s, agencies had tentatively redefined the role of fire in maintaining healthy forest ecosystems. Although agencies believed that human property and economically valuable natural resources must be protected, fire was allowed to burn in carefully prescribed conditions within national parks and wilderness. Fire was shown to be a process that could be beneficial, reduce fuels, stimulate plant growth, and reduce suppression costs. The 2000 *Review* of the 1995 Federal Wildland Fire Management Policy states that fire “should be allowed, as nearly as possible, to function in its natural ecological role” (NIFC 2001, p. 23). All three agencies involved in the southwestern case studies have specific requirements to reestablish natural (i.e., historic) fire regimes (Ostergren 2006b). If this transition is viewed in the AC Framework, between 1910 and 1995 agency personnel “learned” and adopted new, secondary policy aspects in order to meet their

primary policy preference—to manage forests and manage fire.

Despite policy changes to allow and manage fire, more than 95% of all fire starts are still suppressed nationally (Dombeck et al. 2004; NIFC 2007). Our interviews confirm earlier research and opinion pieces that, in addition to the inertia from a culture of fire suppression within agencies, a significant number of personnel are skeptical of WFU and the extensive use of prescribed fire. Objections include that fire may harm endangered species’ habitat, fire in dense forests may lead to catastrophic results by burning down to mineral soil or escaping into communities, and that the public will not accept smoke (Aplet 2006; Liljebald and Borrie 2006; Miller 2006; Kilgore 2007). Nonetheless, the United States’ official policy is to accept fire as a healthy forest process (NIFC 2001).

In the early 20th century, fire was perceived as the primary threat to our nation’s forests.

Physical Fire and Philosophical Wilderness

Fire behavior ranges from infrequent stand-replacement fires, to frequent, low-intensity ground fires. For example, southwestern ponderosa pine forests were generally more open and parklike with frequent, low-intensity fires before Euro-American settlement in the 1880s (Covington and Moore 1994). Grazing, logging, and fire suppression minimized fire as an ecological process, resulting in dense stands of small-diameter trees with increased fuel loads and risk of catastrophic

wildfire (Mast et al. 1999; Moore et al. 2004). With rare exceptions, ponderosa pine-dominated wilderness areas have suffered from suppression policy and deserve special attention because they are important reserves of biological diversity.

Points of divergence have roots in the 1964 Wilderness Act that defines wilderness as both untrammelled by humans, and as areas managed to preserve natural conditions (P.L. 88-577 § 2(c)). The concepts of “untrammelled” and “natural conditions” have been thoughtfully considered elsewhere (Christensen 1995; Cole 1996; Cole and Landres 1996; Worf 1997; Cole 2000; Franklin and Aplet 2002; Graber 2003; Landres et al. 2005). Untrammelled is best defined as an area “self-willed” and free from human manipulation (Zahniser 2005). An untrammelled area would have fire with varying intensity and frequency moving across the landscape regardless of consequences. To maximize untrammelled conditions, managers would not manipulate the vegetation and would go so far as to end fire suppression.

An ecosystem in natural condition implies that it is an intact ecosystem that exists as if Euro-Americans had not intervened (Kilgore 1983; Aplet 1999). Natural systems contain a nearly complete set of species and are self-sustaining in process and function (SER 2004). Natural conditions are difficult to determine in the lower 48 states because there are few ecosystems that can act as a baseline. The decision-making process is complicated when managers, NGOs, and academicians must define a natural range of variability before determining if a particular ecosystem is out of range enough to warrant intervention (Franklin and Aplet 2002).

If we are to reestablish natural fire regimes in low severity fire regimes,

how fast should we act and what means should we employ to establish natural conditions? If agencies step back from all fire suppression, over decades or centuries we would eventually have both natural and untrammled conditions. However, at least in southwestern ponderosa pine forests, we would also have acres of intensely burned landscape, damaged grazing conditions, and distraught communities. In fact, there is no guarantee that over time the resulting landscape would resemble pre-European conditions (if that was considered appropriate and established as the goal). Furthermore, if a particular ecosystem is moving to something different because of climate change, then the concern is that we may have manipulated the forest beyond its capacity to recover to any type of fully functioning system. Alternatively, mechanical thinning could be used to reduce fuel loads and create a natural structure. Reducing the threat of severe fire effects or an escape out into forestland used for timber may be logical and reasonable. But mechanical thinning, even if it is just chainsaws, is an anathema to wilderness character.

Wilderness Fire ACs

We identified three ACs that currently vie for leadership in the wilderness fire policy debate. Our terms try to capture the essence of the ACs' respective policy core positions: (1) Natural First!, (2) the Progressive Naturalists, and (3) the Untrammled. All three ACs agree that the current conditions are unacceptable. They also agree that there should not be any road construction or commercial activity in wilderness. They agree that protecting threatened and endangered species may require unusual or extraordinary action. Agency, NGO, or academic affiliation was not a good predictor of where an



Figure 2—Thick duff and dense stands of smaller ponderosa pine trees present a challenge to BLM managers who would like to see fire return to the Mt. Trumbull Wilderness Area. Photo by David M. Ostergren.

individual stood on wilderness fire policy. Some individuals were more vocal and some were undecided. Some had clear recommendations whereas others were uncertain.

The Natural First! core beliefs accept that people can and should manage wilderness for natural conditions. Human mismanagement has created unacceptable fire conditions, and humans have a duty to return those areas to natural conditions before reintroducing fire. This AC submits that using minimum tools and light mechanical thinning in conjunction with seasonal prescribed fire are acceptable management activities. Members tend to believe: (1) commercially valuable resources outside of wilderness need to be preserved, and (2) the risk to endangered species habitat and cultural resources must be minimized. Theirs is a pragmatic approach that protects human and forest resources.

The BLM has a final environmental impact statement that proposes such a strategy on 3,000 acres (1,215

ha) of Mt. Trumbull Wilderness Area (BLM 2006). A coalition of individuals within and without the BLM has opened up the discussion and passed a proposal that small trees are cut and scattered, and some duff may be removed from around the largest trees. As prescribed fire is reintroduced the effects will be monitored and future policy decisions will be made based on either the success or failure of this strategy. It appears that managers will not take action without careful consultation with the public and wilderness-oriented NGOs. Nonetheless action is entirely possible and would certainly influence future fire policy.

Natural First! management actions range from building fire lines, to thinning with handsaws, or thinning with chainsaws to minimize the amount of time and number of people in the wilderness. The strongest objection to the Natural First! coalition is that action may lead to perpetual manipulation, which may lead to a gardener's version of wilderness (Zahniser 1963).

Despite policy changes to allow and manage fire, more than 95% of all fire starts are still suppressed nationally.

The Progressive Naturalist AC believes, like the Natural First!, that some manipulation of wilderness is acceptable and that we can manage wild nature. However, the Progressive Naturalist AC has a much more cautious approach, with action at an absolute minimum. The best way to maximize both the untrammelled and natural characters of wilderness is to nudge wilderness ecosystems back on to their natural ecological trajectory with WFU and prescribed fire in the cooler seasons and some directional herding of fire. After one to two decades of managed fire use, fires are allowed to burn in the hot seasons (e.g., Kilgore 2007). The Progressive Naturalist AC does not advocate extensive thinning. The ecological and public relations risks are too high. This AC assumes that dramatic management action is an act of hubris in the face of global climate change and the unpredictable long-term effects of 100 years of fire suppression.

Grand Canyon National Park (GCNP) is a good example of the Progressive Naturalist strategy. GCNP is one of the parks with a natural fire zone (Kilgore 2007). For example, the 2005 Dragon Fire crept along for six weeks in full view of north rim visitors. It burned through an area that had been treated by at least one previous prescribed fire and one WFU. Treatment might include large prescribed fires (2,000–3,000 acres, 810–1,215 ha) that are ignited in one day with helicopters spreading fire with “ping-pong balls” that ignite on the ground—a process that is arguably not in the spirit of wilderness. Extensive

areas of the north rim have been treated in this way, and the draft fire management plans call for removing significant GCNP areas from virtually all fire suppression, regardless of when a lightning fire might start.

Another option that is advocated by the Progressive Naturalist AC to encourage more WFU, is to start measuring and rewarding managers for acres burned with WFU—and in fact specify that the records reflect whether those acres were grasslands, forested, first-time burns (i.e., since 1910), or repeat burns in areas that were prepared by earlier fire or management action. At first this appears to be a straightforward policy. However, fire is complex, and reintroducing fire in many circumstances is still viewed with great caution—even skepticism. Therefore, until managers have clear, albeit extensive, guidelines this is an unlikely strategy. In the words of one senior manager: “No bureaucracy ever rewarded adventurism.”

The Untrammelled AC believes that the untrammelled character of wilderness areas should be prioritized, ultimately leading to natural conditions over decades or centuries. A significant belief of this AC is that humans cannot manage wild nature because human skills are limited and unprepared to predict future ecological conditions. This AC submits that federal land management agencies should stop fire suppression. The results may be “unnatural” stand-replacing fires, fires that burn in patchlike mosaics, low-intensity fires, or some combination. Decades or centuries hence, these forests will evolve into natural, untrammelled systems.

Discussion

With an increase in the frequency and intensity of southwestern wildfires we are at a crossroads that requires policy change and subsequent action. The 1964 Wilderness Act was passed in part to provide wild areas equal protection across agencies. Congress denied agencies the administrative authority to grant or rescind wilderness stature, but now we have agency discretion driving wilderness fire policy. The USFS mostly avoids prescribed fire in wilderness areas, the NPS burns large areas with helicopter ignition in cool seasons before allowing WFU, and, at least at Mt. Trumbull, the BLM is taking a cautious approach that may include some preparation before introducing prescribed fire.

If ponderosa pine ecosystems are indeed out of their natural range of variability, and climate change increases conditions for fire, then over time conditions will come to a point where all actors agree that something needs to be done. The wilderness fire subsystem may not agree on a specific action, but eventually may agree on a process.

Our interviews suggest two future alternatives. One option is that one AC will come to dominate the policy discussion and marshal such resources that their policy is implemented. Outside forces may change conditions so much that one existing (or an entirely new) preference dominates. These outside forces may include political leadership, massive public influence, climate change, or a catastrophic fire season that shocks even a public accustomed to billion-dollar fire seasons.

A second option is that a sufficient number of actors learn from each other and develop a single consistent policy. The integrity of any organization or system is preserved through consistent policy—even if that policy

allows for adaptation to different conditions. The fact is that managers are slowly reintroducing fire as a process to southwestern ponderosa pine forests through prescribed fire and WFU. These managers deserve support and guidance from policy makers, NGOs, academicians, researchers, and the general public (Aplet 2006; Miller 2006; Doane et al. 2006; Liljeblad and Borrie 2006; Kilgore 2007).

Observations on Future Policy

The intent of Congress was to establish a system of wild and natural areas regardless of agency administration. We need fire policy that is designed to preserve and improve wilderness character of as many places as possible.

We conclude with a suggested approach that extends from our research and represents a full suite of policy preferences. Essentially this is an amalgamation of the three ACs, a compromise of sorts that moves from one irreversible step to another. All ACs agree that the current status is unacceptable and that the long-term goal is to maximize both untrammeled and natural conditions while fire is reintroduced. Although ACs differ as to a time table, a primary assumption is that ecosystems are complicated. Other assumptions include that there will be no roads, commercial sales, or industrial thinning. Each step should be taken only after research indicates that the next step is necessary.

We concur with Cole's suggestion that each wilderness has a unique combination of ecosystem conditions, agency guidelines, fire regime, and politics (2000). Our suggested approach reflects enough leeway so that each wilderness management agency may reintroduce fire according to their mission, but all interviewees encouraged a cross-agency strategy. Fortunately, interagency cooperation

through the National Interagency Fire Center and the National Wildfire Coordinating Group provides models and potential mechanisms to develop and implement consistent, progressive wilderness fire policy.

Our suggested approach flows from the multiple and complex demands of each AC. This approach moves from one set of core policy beliefs to another and does not advocate any single management choice. The law and the ACs demand that conditions on the ground ought to dictate final decisions and that those conditions must be a combination of natural conditions and wilderness character.

1. In this first step agencies either use WFU or prove that WFU cannot do the job. This requires that agencies allow lightning-caused fires to burn in wilderness or an ecologically identical area (i.e., a proxy) and document the results; although time consuming, postfire research is critical for all parties to move forward. In some areas agencies may document previous fire effects and use those results. To increase untrammeled conditions, agencies and NGOs may even agree on a wider definition of what an acceptable amount of severe fire is than is the current norm.
2. Step two is a philosophical leap from step one that suggests we can manipulate wilderness in the short term for the long-term good. If WFU proves untenable, the second step is to use prescribed fires with natural firebreaks in cool seasons, and move to WFU in the hot season. The Grand Canyon National Park may argue they have already taken this step with success. Untrammeled advocates may argue that the

documentation does not clearly indicate that WFU has produced unacceptable results, and/or that helicopters and massive one-day burns maintain the wilderness character of the north rim.

3. If sufficient documentation and research demonstrates that neither step one or two will work in a particular wilderness area, the last step is to use light thinning/pruning around old growth and cool-season prescribed fire—and eventually move to WFU. In areas that are too close to communities, highly degraded, or utterly unmanageable with light treatments, it is conceivable that more extensive version of this option may be employed and WFU never allowed—but many will argue that is a garden, not a wilderness.

This suggested approach would be built on opportunities for compromise between agencies and NGOs to pursue a common goal. A wilderness advocacy group may have difficulty accepting any management action in wilderness. Therefore, to gain support, federal agencies may need to build in guarantees, or take small steps to demonstrate that their ultimate goal is to let wilderness manage itself. At the same time, agencies may have to accept fires moving out of artificial wilderness boundaries and prepare for the consequences. If agencies demonstrate that they will accept fire moving out of wilderness, NGOs may become more supportive of some prophylactic action within wilderness boundaries. As in all natural resource decisions, progress hinges on compromise.

Admittedly, these steps assume a level of certainty and knowledge that many in all three ACs might find lacking. Waiting for research to document the results of early steps may be

unacceptably slow for those in the Natural First! and Progressive Naturalist ACs. The choice is that each wilderness area either find a balance between coalitions, or the ecological, political, and geographic conditions will tip the discussion in one coalition's favor. Our hope is that lessons learned in one area will allow for progress and restoring habitat in another, just as the early work in Kings Canyon and Sequoia National Parks opened the door for fire's comeback. We need a policy that prevents catastrophe and creates more wild, more untrammled, more natural areas for future generations to cherish. IJW

References

- Aplet, G. H. 1999. On the nature of wilderness: Exploring what wilderness really protects. *Denver University Law Review* 76(2): 347–67.
- . 2006. Evolution of wilderness fire policy. *International Journal of Wilderness* 12(1): 9–13.
- Arno, S. F., and S. A. Bunnell. 2003. Managing fire-prone forests: Roots of our dilemma. *Fire Management Today* 63(2): 12–16.
- Atkinson, R., and J. Flint. 2001. Accessing hidden and hard-to-reach populations: Snowball technique strategies. *Social Research Update* 33. <http://sru.soc.surrey.ac.uk/SRU33.html> (accessed August 30, 2007).
- BLM, Bureau of Land Management. 2006. *Arizona Strip Proposed Plan Final EIS: Bureau of Land Management and National Park Service*. Washington, DC: Department of Interior.
- Bonnicksen, T. M. 1985. Ecological information for park and wilderness fire management planning. In *Proceedings—Symposium and Workshop on Wilderness Fire*, ed. James E. Lotan, Bruce M. Kilgore, William C. Fischer, and Robert W. Mutch (168–173). November 15–18, 1983, Missoula, MT. Gen. Tech. Rep. INT-182 Ogden, UT: USFS Intermountain Forest and Range Experiment Station.
- Burnett, M., and C. Davis. 1999. Getting out the cut: Politics and national forest timber harvests, 1960–95. *Administration and Society* 34(2): 202–28.
- Busenberg, G. 2004. Wildfire management in the US: The evolution of a policy failure. *Review of Policy Research* 21(2): 145–56.
- Christensen, N. L. 1995. Fire and wilderness. *International Journal of Wilderness* 1(1): 30–34.
- Cole, D. N. 1996. Ecological manipulation in wilderness—An emerging management dilemma. *International Journal of Wilderness* 2(1): 15–19.
- . 2000. Paradox of the primeval: Ecological restoration in wilderness. *Ecological Restoration* 18(2): 77–86.
- Cole, D. N., and P. B. Landres. 1996. Threats to wilderness ecosystems: Impacts and research needs. *Ecological Applications* 6(1): 168–84.
- Covington, W. W., and M. M. Moore. 1994. Southwestern ponderosa forest structure: Changes since Euro-American settlement. *Journal of Forestry* 92(1): 39–47.
- Davis, C., and S. Davis. 1988. Analyzing change in public lands policymaking from subsystems to advocacy coalitions. *Policy Studies Journal* 17(Fall): 3–24.
- Doane, D., Jay O'Laughlin, Penelope Morgan, and Carol Miller. 2006. Barriers to wildland fire use: A preliminary problem analysis. *International Journal of Wilderness* 12(1): 36–38.
- Dombeck, M. P., J. E. Williams, and C. A. Wood. 2004. Wildfire policy and public lands: Integrating scientific understanding with social concerns across landscapes. *Conservation Biology* 18(4): 883–89.
- Franklin, J. F., and G. H. Aplet. 2002. Wilderness ecosystems. In *Wilderness Management: Stewardship and Protection of Resources and Values*, 3rd ed., John C. Hendee and Chad P. Dawson (263–285). Golden, CO: Fulcrum Publishing.
- Graber, D. M. 2003. Ecological restoration in wilderness: Natural versus wild in National Park Service wilderness. *The George Wright Forum* 20(3): 34–41.
- Heinselman, M. L. 1978. Fire in wilderness ecosystems. In *Wilderness Management*. USDA Forest Service misc. publication 1365, ed. J. C. Hendee, G. H. Stankey, and R. C. Lucas (249–78).
- Jenkins-Smith, H. C., and P. A. Sabatier. 1993. The dynamics of policy-oriented learning. In *Policy Change and Learning: An Advocacy Coalition Approach*, ed. P. A. Sabatier and H. C. Jenkins-Smith. Boulder, CO: Westview Press.
- Jensen, J. L., and R. Rodgers. 2001. Cumulating the intellectual gold of case study research. *Public Administration Review* 61(2): 237–39.
- Johnson, J. B., and R. A. Joslyn. 1995. *Political Science Research Methods*, 3rd ed. Washington, DC: Congressional Quarterly.
- Kilgore, B. M. 1983. What is "natural" in wilderness fire management? In *Proceedings: Symposium and Workshop on Wilderness Fire*, ed. J. M. Lotan, B. M. Kilgore, W. C. Fischer, and R. W. Mutch (57–67). November 15–18, 1983, Missoula, MT. GTR-INT-182. Ogden, UT: USFS Intermountain Forest and Range Experiment Station.
- . 2007. Origin and history of wildland fire use in the U.S. national park system. *The George Wright Forum* 24(3): 92–122.
- Kilgore, B. M., and G. S. Briggs. 1972. Restoring fire to high-elevation forests in California. *Journal of Forestry* 70: 266.
- Landres, P. B., M. Brunson, and L. Merigliano. 2001. Naturalness and wildness: The dilemma and irony of ecological restoration in wilderness. *Wild Earth* 10(4): 77–82.
- Landres, P., S. Boutcher, L. Merigliano, C. Barns, D. Davis, T. Hall, S. Henry, B. Hunter, P. Janiga, M. Laker, A. McPherson, D. S. Powell, M. Rowan, and S. Sater. 2005. *Monitoring Selected Conditions Related to Wilderness Character: A National Framework*. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station Gen. Tech. Rep. RMRS-GTR-151.
- Leopold, A. S., S. A. Cain, C. M. Cottam, I. N. Gabrielson, and T. L. Kimball. 1963. Wildlife management in the national parks. *American Forestry* 69: 32–35, 61–63.
- Liljeblad, A., and W. T. Borrie. 2006. Trust in wildland fire and fuel management decisions. *International Journal of Wilderness* 12(1): 39–43.
- Mast, J. N., P. Z. Fulé, M. M. Moore, W. W. Covington, and A. E. M. Waltz. 1999. Restoration of presettlement age structure of an Arizona ponderosa pine forest. *Ecological Applications* 9(1): 228–39.
- Miller, C. 2006. Wilderness fire management in a changing world. *International Journal of Wilderness* 12(1): 18–21.
- Moore, M. M., D. W. Huffman, P. Z. Fulé, W. W. Covington, and J. E. Crouse. 2004. Comparison of historical and contemporary forest structure and composition on permanent plots in southwestern ponderosa pine forests. *Forest Science* 50(2): 162–76.
- NIFC, National Interagency Fire Center. 2001. Review and Update of the 1995 Federal Wildland Fire Management Policy. www.nifc.gov (accessed April 2007). Resource Council in Seeley Lake, Montana, USA.
- . 2007. www.nifc.gov (accessed April 2008).
- NPS, National Park Service. 1969. *Compilation of the Administrative Policies for the National Parks and*

Continued on page 22

PERSPECTIVES FROM THE
ALDO LEOPOLD WILDERNESS RESEARCH INSTITUTE

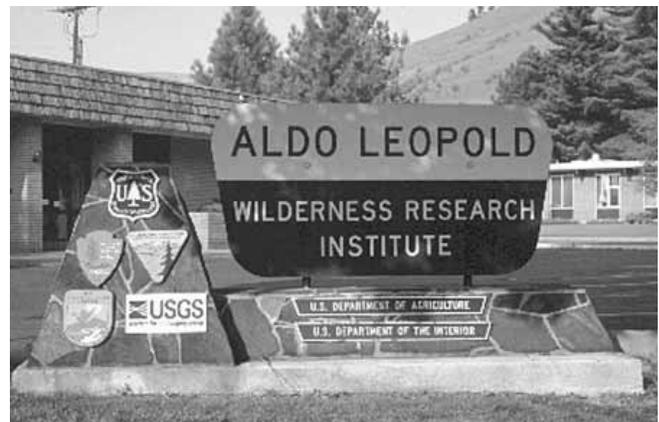
Changing Research Needs in Wilderness Fire

BY CAROL MILLER

Wilderness policies of the four agencies that manage wilderness in the United States recognize the importance of fire as a natural process and federal fire policy supports allowing lightning-caused fires to burn. However, a complex suite of challenges has limited the restoration and maintenance of natural fire regimes in wilderness (Parsons 2000). As a result, fire suppression has been the dominant fire management strategy in wilderness, despite running counter to management goals for lands that are to be “untrammeled by man” and “affected primarily by the forces of nature.”

Recognizing the threat that suppression poses to wilderness stewardship, a major area of research at the Aldo Leopold Wilderness Research Institute (ALWRI) is wilderness fire. Much of ALWRI’s fire research has focused on the fire management strategy known as wildland fire use—a strategy that allows wildland fires to burn for their beneficial effects. Survey research has improved our understanding of the barriers and facilitators to wildland fire use, which include an array of biophysical, social, political, and institutional factors (Black et al. 2008). Other research efforts have resulted in information and tools to support fire management planning and wildland fire use decisions (e.g., Black 2005; Miller and Davis in press), and we have investigated a variety of social issues related to wildland fire use (Knotek 2005). This research focus has been highly relevant, but we live in a rapidly changing world. Wilderness managers are facing new challenges as a result of climate change, biological invasions, and exurban development. Will our wilderness fire research continue to be responsive and relevant? Might we need to adjust our focus?

The fire management and policy arenas are highly dynamic. In the past, the strategy of wildland fire use was primarily restricted to a few large wilderness areas. Today,



the strategy is increasingly being implemented on nonwilderness lands, and the past five years (2003–2007) have seen a fourfold increase in the area burned with the wildland fire use strategy when compared to the previous five years. Although data are not readily available to ascertain how much of the increase in wildland fire use has occurred in wilderness versus nonwilderness, the area burned with the wildland fire use strategy in wilderness has most certainly increased during this time. Another emerging trend is that some wildfires are being fought less aggressively than they might have been in the past. Extreme drought, increased fire activity, and limited availability of suppression resources have caused federal agencies to be more selective in which fires to suppress aggressively. Fires are being prioritized for suppression according to their likelihood of threatening homes or other infrastructure. Because wilderness areas tend to be distant from the built environment, this trend could result in more fire in wilderness. Less aggressive suppression and more fire may be the perfect prescription for wilderness areas with fire-dependent ecosystems.

But more fire is not the right prescription for all wilderness areas. Where the exclusion of fires or the invasion of alien plants has substantially altered conditions, fire may no longer act as a natural process, and instead have unnatural and undesirable effects. In many desert and shrubland ecosystems, a combination of climate trends, alien plant invasions, and increasing human-caused ignitions threaten the persistence of native species that are not adapted to frequent fire. Wildland fire use is not the answer to the management challenges in these ecosystems.

ALWRI's 2005 charter describes the "need for improved information to guide the stewardship of fire as a natural process in wilderness while protecting social and ecological values inside and outside wilderness." Meeting

this need requires an understanding of natural fire regimes, how they are being altered, and the development of feasible restoration and maintenance strategies—all of which are active areas of ALWRI research. However, most of our research has been from the perspective that the problem is fire suppression and the solution is more fire use. Obviously, this is not universally true and we need to broaden our perspective. In the future, I expect we will be taking a more ecoregional approach that addresses the varying and changing role of fire throughout the diverse National Wilderness Preservation System. IJW

References

- Black, A. 2005. The fire effects planning framework. *International Journal of Wilderness* 11(1): 19–20.
- Black, A., M. Williamson, and D. Doane. 2008. Wildland fire use barriers and facilitators. *Fire Management Today* 68(1): 10–14.
- Knotek, K. 2005. Social and institutional influences on wilderness fire stewardship. *International Journal of Wilderness* 11(3): 30, 12.
- Miller, C., and B. Davis. In press. Quantifying the consequences of fire suppression in two California national parks. *The George Wright Forum*.
- Parsons, D. J. 2000. The challenge of restoring fire to wilderness. In *Wilderness Science in a Time of Change Conference, vol. 5: Wilderness Ecosystems, Threats, and Management*, comp. D. N. Cole, S. F. McCool, W. T. Borrie, and J. O'Loughlin (276–82). Proceedings RMRS-P-15 VOL-5. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- CAROL MILLER is a research ecologist with the Aldo Leopold Wilderness Research Institute in Missoula, Montana 59801, USA; email: cmiller04@fs.fed.us.
-
- Continued from WILDERNESS FIRE POLICY IN THE SOUTHWEST, page 20**
- National Monuments of Scientific Significance.* Washington, DC: Department of Interior.
- Ostergren, D. M. 2006a. *Wilderness Management and the Restoration of Fire: An Analysis of Laws and Regulations in Northern Arizona.* Flagstaff, AZ: ERI Issues in Restoration <http://hdl.handle.net/2175/302> (accessed April 2007).
- . 2006b. Comparing wilderness restoration and fire policy in three federal agencies: Variations on a theme in northern Arizona. *Journal of Land, Resources and Environmental Law* 26(2): 267–95.
- Parsons, D. J. 2000. The challenge of restoring natural fire to wilderness. In *Wilderness Science in a Time of Change Conference, vol. 5*, ed. D. N. Cole, S. F. McCool, W. T. Borrie, and J. O'Loughlin (276–82). May 23–27, 1999, Missoula, MT. Proceedings RMRS-P-15-VOL-5. Ogden, UT: USDA Forest Service.
- P.L. 88-577. *The Wilderness Act.*
- Pralle, S. B. 2003. Venue shopping, political strategy, and policy change: The internationalization of Canadian forest advocacy. *Journal of Public Policy* 23(3): 233–60.
- Pyne, S. J. 1982. *Fire in America: A Cultural History.* Princeton, NJ: Princeton University Press.
- Rothman, H. K. 2007. *Blazing Heritage: A History of Wildland Fire in the National Parks.* New York: Oxford University Press.
- Sabatier, P. A., 1993. Policy change over a decade or more. In *Policy Change and Learning: An Advocacy Coalition Approach*, ed. P. A. Sabatier and H. C. Jenkins-Smith (13–39). Boulder, CO: Westview Press.
- . 1998. The advocacy coalition framework: Revisions and relevance for Europe. *Journal of European Public Policy* 5(1): 98–130.
- Sabatier, P. A., and H. C. Jenkins-Smith. 1999. The advocacy coalition framework: An assessment. In *Theories of the Policy Process*, ed. P. A. Sabatier (117–166). Boulder, CO: Westview Press.
- SER, Society for Ecological Restoration International Science and Policy Working Group. 2004. *The SER International Primer on Ecological Restoration.* www.ser.org, and Tucson, AZ: Society for Ecological Restoration International.
- Springer, C. 2007. Mora NFH and TC brings Gila trout closer to recovery. *Endangered Species Bulletin* 32(1): 22–23.
- Stephens, S. L., and L. W. Ruth. 2005. Federal forest-fire policy in the United States. *Ecological Applications* 15(2): 532–42.
- van Wagtenonk, J. W. 1991. The evolution of National Park Service fire policy. In *Fire in the Environment: Ecological and Cultural Perspectives*, ed. S. C. Nodvin and T. A. Waldrop (328–32) Gen. Tech. Rep. SE-69. Asheville, NC: USDA Forest Service, Southeast Forest Experiment Station.
- Worf, W. A. 1997. Response to "Ecological manipulation in wilderness" by Dr. David Cole. *International Journal of Wilderness* 3(2): 30–31.
- Zahniser, H. 1963. Guardians not gardeners. *The Living Wilderness* 83: 2.
- Zahniser, E. 2005. The Wilderness Act: Humility and restraint in American land law. Presented at the 2005 George Wright Society Biennial Conference, March 14–18, Philadelphia, PA.
- DAVID M. OSTERGREN is the director of the Environmental Education Graduate Program at Merry Lea Environmental Learning Center, Goshen College, Box 263, Wolf Lake, Indiana, 46796, USA; e-mail: davo@goshen.edu.
- MEGAN L. TRIPLETT is with the Clearwater Resource Council in Seeley Lake, Montana, USA.

Awakening Place Awareness during a 30-Day Wilderness Leadership Program

BY GARRETT HUTSON and LUCY BAILEY

Abstract: Whereas much research has been conducted on the environmental perceptions of outdoor program participants, little research has focused on the experiences of outdoor professionals who facilitate wilderness education programs. The purpose of this study was to explore how outdoor leaders experienced initial person-place relationships as they began a 30-day instructor course with the National Outdoor Leadership School (NOLS). This study utilized qualitative measures to explore how 14 outdoor leaders understood place awareness during the experience. Data were collected through multiple in-depth interviews and participant observations throughout a 30-day wilderness immersion. This article focuses on the ways outdoor leaders described and formed their awareness of the setting. Two core themes emerged from outdoor leaders' descriptions of place awareness: "a sense of belonging" and "refining place-memories." Implications for wilderness leadership are discussed.

Introduction and Rationale

The National Outdoor Leadership School (NOLS) was founded in 1965 by Paul Petzoldt to train people to safely lead others during extended trips in the out-of-doors. NOLS is the largest backcountry permit holder in the United States and holds courses in 14 different locations around the world. An important aspect of NOLS is its promotion of person-place bonds during wilderness leadership programs (MacLean 2002). Instructor courses are designed for people to refine their outdoor leadership skills and to prepare for potential employment with the school. The NOLS instructor course in this study took place in the Wind River Mountains in the western U.S. state of Wyoming. The purpose of the study was to explore how participants' experienced their place awareness during a NOLS program.

NOLS instructors are expected to promote environmental stewardship behaviors that protect wilderness for future generations. One way the school promotes environmental ethics is through "helping students foster a sense of place" (Johnson 2002, p. 5). In addition, the school strives to promote environmental ethics through helping students



▲ Dr. Garrett Hutson in the Wind River Range. Photo courtesy of Garrett Hutson.



▶ Dr. Lucy Bailey at Oklahoma State University. Photo courtesy of Lucy Bailey.

PEER REVIEWED

Individuals at the beginning of an extended wilderness experience develop a sense of belonging and use memories to interpret and refine their relationships to place.

connect personally with wilderness areas, become responsible stewards of the natural environment, and connect spiritually with the settings in which NOLS courses take place (Johnson 2002). Because the school commonly uses the term *sense of place* in its literature and pedagogical practices, this concept was deemed most appropriate to explore how members of a NOLS instructor course understand and describe their own person-place relationships.

The sense of place concept may best be understood as the variety of affective and cognitive bonds people form to a particular environment (Low and Altman 1992; Tuan 1974). Literature describes the meanings people attach to places as complex and dynamic phenomena (Relph 1976; Tuan 1977). Human geographer Yu-Fi Tuan theorizes that a space becomes a place “when we get to know it better and endow it with value” (1977, p. 6). The sense of place concept has varied meanings in the literature. For the purposes of this study, a place can be defined as a setting combined with a “deeply affective characterization crystallized from an individual’s emotions, experience, and cultural background” (Cochrane 1987, p. 7).

Although an abundance of place-based research has been conducted with outdoor programs and recreation participants, little research has focused on the meanings professionals in leadership roles attach to natural settings, particularly upon encounter. Additionally, place-based research and related literature has had a tendency to

focus solely on spiritual interpretations of nature (see Fredrickson and Anderson 1999; Rockefeller and Elder 1992; Stringer and McAvoy 1992), strength of place attachment and setting preference (Kyle, Mowen, and Tarrant 2004), and has often only explored positive place experiences without considering other ways place meanings are formed (Manzo 2005).

Although this scholarship has helped to better understand the intricacies of people’s connections to outdoor settings, it has not explored the ways people, particularly outdoor leaders, form foundational impressions as they enter wilderness environments for an extended period. If those involved in wilderness leadership wish to better understand the processes by which places become meaningful and better utilize those processes to facilitate their students’ development of place connection, leaders may be able to do so more effectively by understanding how their own relationships to outdoor settings form and evolve.

Methods

The researchers used in-depth qualitative interviews and participant observations to explore program participants’ experience of person-place relationships (Denzin and Lincoln 1994). The study utilized a phenomenological perspective, which illuminates “the importance of using methods that capture people’s experience of the world” (Patton 2002, p. 107). Two tenets of a phenomenological perspective are: (1) the importance of

phenomenological inquiry resides within the ways people interpret their immediate experience; and (2) the best way to understand the experience of others is to experience it ourselves (Patton 2002). A key methodological component of this study was utilizing interviews and participant observation to capture respondents’ immediate and unfolding interpretation of the sense of place concept in a wilderness setting rather than utilizing retrospective methodologies more appropriate for understanding participants’ reconstruction of meanings after they exit the field. The eight female and six male participants in the study ranged from 21 to 37 years of age. Participants had a wide range of past experiences in outdoor education and wilderness leadership. Three of the participants were instructors for NOLS. Participants in the study were volunteers and were not paid for their involvement. All participants who were invited to participate in the study accepted the invitation.

One of the researchers, a participant in the course, conducted semistructured interviews during the 30-day experience in the field. The researcher interviewed each participant at least twice as time permitted throughout the course. Near the beginning of the course, the researcher facilitated open discussions on the sense of place concept with individuals and groups. Participants were then invited to elaborate on their comments, to describe moments of connection to and disconnection from place, and to describe emotions that may have accompanied those experiences. Some examples of interviewer prompts for elaboration included, “What was that experience like?” “What feelings did you experience during those moments?” Consistent with participant observation techniques, interviews were held in both private and group natural settings

such as on the trail, inside tents at night, and during meals. All interviews were audiorecorded. Occasionally, participants recorded their thoughts privately without researcher intrusion.

The researchers interpreted the lived experience of this group through the phenomenological procedure of “description-reduction-interpretation” (Lanigan 1988, p. 148). One researcher conducted the interviews, recorded observations, and engaged in key data immersion through transcribing the interviews verbatim after the course. The researcher analyzed transcripts inductively through a process of open coding to identify initial emerging themes and then initiated member checks with four participants to ensure the accuracy of the researcher’s interpretations. Then, both researchers returned to the data independently to move from initial categorization to “distinguish[ing] and identify[ing] the conceptual import and significance” of data units (Emerson, Fretz, and Shaw 1995, p. 151).

After repeated readings of transcripts, researchers refined categories that had emerged within and across participants’ responses. Using “analyst triangulation” (Patton 2002, p. 560), researchers compared codes, identified groups of statements that merged with individual themes, and reduced themes through selective coding (Lanigan 1988). Rival explanations and negative cases within the findings (Patton 2002) were intentionally sought to offer multiple ways of understanding data. The interpretation that follows is offered to illustrate the significance of the ways the two core themes, “a sense of belonging” and “refining place-memories,” helped to facilitate a sense of place in a wilderness setting.

Results

Data analysis revealed two primary

and interconnected themes that suggest how participants become aware of and facilitate person-place relationships through “a sense of belonging” and “refining place-memories.” The first code indicates to an individual her/his awakening awareness to the place, and the second code refers to a tool the outdoor leader uses to facilitate connections to new environs. These themes will be illustrated with data that most clearly represent the ways participants became aware of their surroundings and began developing and trying to articulate emerging connections.

Theme 1—A Sense of Belonging

I think “sense of place” is hiking in the wilderness and when you stop and put up a tent it feels like you’re at home.

Study participants discussed in a variety of emotional registers their awakening awareness of and emerging sense of connection to the Wind River Mountains. For example, on the third day of the course, one participant described his increasing sense of comfort that felt like “home”:

I think sense of place is hiking in the wilderness and when you stop and put up a tent it feels like you’re at home. I think comfort out here, not feeling that you’re away from home.

This experienced outdoor leader identifies a growing connection to the setting when it evokes “emotional” rather than “rational” aspects of self and propels a growing sense of “comfort,” “peace,” and “feeling at home.” Another reflected,

It’s that total connection feeling ... it means I could spend 100 more days out here or I could go back right now to the city ... or I could die in five minutes ... it’s all OK. This is enough.

Many participants experienced their emerging connection to the wilderness environment as an emotional and potent sense of belonging.

For other participants, awareness of the setting awakened as particulars of the physical environment became increasingly familiar:

It’s pretty distinctive terrain, learning about it definitely helps foster [a sense of place] ... having more of an



Figure 1—View from Gannet Peak area. Photo courtesy of Garrett Hutson.



Figure 2—Study participants in the Wind River Range traveling on a glacier. Photo courtesy of Garrett Hutson.

understanding of it in a very tangible way, like what grows here, lives here, and what used to live here, how it came to be the way it is today.

Learning about the “distinctive” elements of the physical terrain fueled this participant’s feelings of connectedness to the Wind River Mountains, its unique flora and fauna, and its natural history. Other respondents also connected knowledge of physical location to increasing place awareness:

I think that each day that passes and each cloud that passes over and sun rises ... finding all the different braids in the river and little lakes and seeing the fish ... it all adds up ... it means I’ll wake up the next day and be closer to the Wind Rivers.

Respondents described moments in which map reading, views of the landscape, or the shape and feel of ice and boulders contributed tangible knowledge of setting particulars. This specific, contextual information fostered awareness of and a sense of belonging in the “Winds.”

Human relationships also fostered participants’ sense of connection to the wilderness environment. Leaders expressed the bonds to land that shared experiences—laughter, watching sunsets, scaling ice walls, fishing—helped form:

to have a relationship with the people around you that you share the land with ... for me ... it’s an important aspect, because they are part of the environment around you and they are part of the experience, that for me creates a sense of place.

For some, such relationships were integral to forming connections to the physical environment: “I not only have to have a relationship with the environment,” one participant said, “but a relationship with the people involved in the environment.” Both elements were necessary to creating a “complete sense of home.”

Finally, respondents identified factors that interfered with establishing connections:

In the past four days I haven’t been focusing on that [sense of place] at

all. I’ve been focusing on the folks around me, how my teaching is ... the scene, what’s going on ... and I’ve probably only had a few flashes of that, like when we first stepped out of the bus ... this is amazing! ... The anticipation of how I’m going to feel having been out here ... [but] ... I’m not feeling super-connected right now to my surroundings. ... I haven’t reached that yet, just not enough time.

Insufficient time and psychic space prevented this respondent from experiencing more than “flashes” of connection to her physical surroundings. Another participant explained that feeling “busy” and “drained” before the trip interfered with forming specific attachments with the Winds. The joy he experienced emerged from his general love of the mountains and the outdoors, rather than this specific location. Participants listed teaching responsibilities, talk, books, or glimpsing such signs of civilization as trash or town lights in the distance as distractions from the focus necessary to develop a sense of belonging to the Winds.

These examples demonstrate some of the ways this group of outdoor leaders understood their initial person-place relations within a particular context. A *sense of belonging* with the setting was a different process for each participant. Yet, this emerging sense of comfort and familiarity appeared to provide a key foundation for the leaders’ person-place relationships to evolve further into longer-lasting and more refined place-based memories.

Theme 2—Refining Place-Memories

I’m just starting to be able to sense “a place” in the Wind Rivers, and right now it’s more based on memories than knowledge of the whole area.

For many of the participants, developing a relationship with the Wind River wilderness unfolded through a process of connecting their experiences to memories of other experiences in the outdoors. The following quote evidences the importance of the “relived” experience to a participant who visited the Winds in his past:

I’m just starting to be able to sense “a place” in the Wind Rivers and right now it’s more based on memories than knowledge of the whole area. When I return to a place that I already know very well, it has a lot of memories ... and oftentimes that’s more powerful, it’s like a sense when you smell something or ... when you’re back in familiar surroundings and many memories come up based on the surroundings.

The “chill in the air” or the “feel of the ice” stimulate memories that can serve as springboards for establishing connections with new environs or deepening those with familiar settings. Participants also identified memories as a powerful source of constancy and consistency that can impel individuals to protect environments. One outdoor leader expresses his desire to preserve for the common good settings that are significant personally:

It’s easier for us to also want to protect that area, to keep it the same as we remember because if it is altered ... it’s not going to have the same power at bringing up memories ... once something means a lot to us it’s hard for us to let it go and let it change.

Memories can play a key role in fostering and deepening a sense of place and a commitment to wilderness preservation—principles at the heart of NOLS.

As participants became aware of distinct features of the Wind River Mountains, they often utilized memories of past experiences as reference points for establishing new place relationships. One participant reflects:

It’s funny because this ecosystem is very similar to Yellowstone, but the rock is very similar to the stuff I’ve grown up on for the last 10 years. So for the last four days I have felt a growing sense of place with the Wind Rivers ... but ... I have jumped in a greater sense of belonging or sense of knowing this place because it’s so similar to other places that I’ve been.

This participant’s diverse memories of other settings served as points of reference for clarifying what seemed familiar about the Winds and facilitating his sense of belonging, and in turn, his sense of connection to the new setting.

exhilarating to be here every time. It seems like there is always something new and some reason to be excited. The first couple of days here always seem weird, but once we get into it further, things will change.

This outdoor leader experiences “elation” and a sense of comfort as he reenters a familiar and meaningful place as well as “exhilaration” when recognizing how elements of the landscape have changed. Actively comparing, contrasting, and refining memories facilitates his relationship to the Winds.

Discussion

This study illustrates some of the ways setting awareness awakens as individuals at the beginning of an extended wilderness experience develop a sense of belonging and use memories to interpret and refine their relationships to place. These findings are consistent

The meanings that participants attached to the Wind Rivers should encourage wilderness leaders to pay careful attention to the initial place impressions of others during the programs they facilitate or manage.

Finally, demonstrating elements of both themes 1 and 2, one outdoor leader captured the layered meanings place could accrue after years of experience and engagement:

I’ve been coming here, you know 60 days a year ... so I think what I’m feeling now is high elation. I’m feeling settled and happy about being here, because I’m feeling more familiar with it, but it is also very unique for me to see all the different seasons. ... Since I’ve gotten to know this place a little more, I’ve become very comfortable with it. It’s

with research literature that suggest the meanings people attach to places are complex, multifaceted, and are often different from person to person (Bricker and Kerstetter 2002; Jorgensen and Stedman 2001; Kaltenborn and Williams 2002). Further, the results delineate specific ways a sense of belonging and place-memory refinement shape emerging wilderness relationships.

The meanings that participants attached to the Wind Rivers should encourage wilderness leaders to pay careful attention to the initial place

impressions of others during the programs they facilitate or manage. As mentioned, related literature has often focused on the spiritual dimensions of the wilderness experience (Fredrickson and Anderson 1999; Graber 1976; McDonald 2003; Roberts 1996), with less focus on perhaps more ordinary aspects of becoming acquainted with a particular wilderness setting through developing a sense of belonging, or the role that memories of past wilderness experiences can play as supported by the findings in this study. Furthermore, it's worth noting that adjusting to the stress of a wilderness expedition caused outdoor leaders in this study to feel distracted from their surroundings. Indeed, Koesler (1994) found that anxiety levels of NOLS students before the start of courses affected their perceived self-efficacy within wilderness environments. If outdoor leaders can actively help students to enter the wilderness as comfortably as possible, they may be able to temper students' anxiety and stress and maximize their programs' effectiveness in facilitating connectedness to wilderness surroundings—a goal of NOLS.

NOLS aspires to help students find their own sense of place during wilderness leadership programs so they may transfer positive feelings toward wilderness settings to other outdoor environments. Other studies that focus on student-reported learning during NOLS courses help in clarifying the learning process and outcomes that occur within wilderness education contexts (see Paisley, Furman, Sibthorp, and Gookin 2008). As organizations such as NOLS continue to explore the particulars of student outcomes related to environmental perceptions and stewardship, greater specificity will be needed to understand the place perceptions of those who facilitate NOLS

experiences. This phenomenological study offers a beginning to understanding the ways outdoor leaders initially forge meaningful relationships with a wilderness environment. IJW

References

- Bricker, K. S., and D. L. Kerstetter. 2002. An interpretation of special place meanings whitewater recreationists attach to the South Fork of the American River. *Tourism Geographies* 4(4): 396–425.
- Cochrane, T. 1987. Place, people, and folklore: An Isle Royal case study. *Western Folklore* 46: 1–20.
- Denzin, N. K., and Y. S. Lincoln. 1994. *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage.
- Emerson, R., R. Fretz, and L. Shaw. 1995. *Writing Ethnographic Field Notes*. Chicago: University of Chicago.
- Fredrickson, L. M., and D. H. Anderson. 1999. A qualitative exploration of the wilderness experience as a source of spiritual inspiration. *Journal of Environmental Psychology* 19: 21–39.
- Graber, L. 1976. *Wilderness as Sacred Space*. Washington, DC: Association of American Geographers.
- Johnson, M. 2002. NOLS expectations for environmental studies. In *NOLS Environmental Education Notebook*, ed. J. Gookin and D. Wells (5). Lander, WY: The National Outdoor Leadership School.
- Jorgensen, B., and R. Stedman. 2001. Sense of place as an attitude: Lakeshore owners' attitudes toward their properties. *Journal of Environmental Psychology* 21: 233–48.
- Kaltenborn, B. P., and D. R. Williams. 2002. The meaning of place: Attachments to Femundsmarka National Park, Norway, among tourists and locals. *Norwegian Journal of Geography* 56: 189–98.
- Koesler, R. (1994). *Factors influencing leadership development in wilderness education*. PhD dissertation, Michigan State University, East Lansing, Michigan.
- Kyle, G. T., A. J. Mowen, and M. Tarrant. 2004. Linking place preferences with place meaning: An examination of the relationship between place motivation and place attachment. *Journal of Environmental Psychology* 24: 439–54.
- Lanigan, R. L. 1988. *Phenomenology of Communication: Merleau Ponty's Thematics in Communicology and Semiology*. Pittsburgh, PA: Duquesne University Press.
- Low, S. M., and I. Altman. 1992. Place attachment: A conceptual inquiry. In *Place Attachment*, ed. I. Altman and S. M. Low (1–12). New York: Plenum Press.
- MacLean, R. 2002. Being here now: Teaching a sense of place. In *NOLS Environmental Education Notebook*, ed. J. Gookin and D. Wells (17–19). Lander, WY: The National Outdoor Leadership School.
- Manzo, L. C. 2005. For better or for worse: Exploring multiple dimensions of place meaning. *Journal of Environmental Psychology* 25: 67–86.
- McDonald, B. 2003. The soul of environmental activists. *International Journal of Wilderness* 9(2): 14–17.
- Paisley, K., N. Furman J. Sibthorp, and J. Gookin. 2008. Student learning in outdoor education: A case study from the National Outdoor Leadership School. *Journal of Experiential Education* 30(3): 201–22.
- Patton, M. 2002. *Qualitative Research and Evaluation Methods*. Thousand Oaks, CA: Sage.
- Relph, E. 1976. *Place and Placelessness*. London: Pion.
- Roberts, E. 1996. Place and the spirit in public land management. In *Nature and the Human Spirit: Toward an Expanded Land Management Ethic*, ed. B. L. Driver, D. Dustin, T. Baltic, G. Elsner, and G. Peterson (61–78). State College, PA: Venture.
- Rockefeller, S., and J. Elder, eds. 1992. *Spirit and Nature: Why the Environment is a Religious Issue*. Boston: Beacon Press.
- Stringer, L. A., and L. H. McAvoy. 1992. The Need for Something Different: Spirituality and the Wilderness Adventure. *Journal of Experiential Education* 15(1): 13–21.
- Tuan, Y. F. 1974. *Topophilia: A study of Environmental Perception, Attitudes and Values*. NJ: Prentice Hall.
- . 1977. *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota Press.

GARRETT HUTSON is an assistant professor in the Department of Recreation and Leisure Studies at Brock University, St. Catharines, Ontario, Canada; 500 Glenridge Avenue, L2S 3A1 CANADA; phone: 905.688.5550 ext. 4784; email:ghutson@brocku.ca.

LUCY BAILEY is an assistant professor of social foundations and qualitative research at Oklahoma State University in Stillwater, Oklahoma, USA; 215 Willard Hall, 74074; email: lucy.bailey@okstate.edu.

Sacred Natural Sites of Indigenous and Traditional Peoples in Mexico

A Methodology for Inventorying

BY GONZALO OVIEDO and MERCEDES OTEGUI

Introduction

Indigenous and traditional peoples' cultural values and spirituality have often led to the creation and ongoing protection of Sacred Natural Sites (SNS) that are natural environments containing significant wilderness, biodiversity, and spiritual values. Worldwide, many natural elements such as mountains, rivers, lakes, marshes, caves, forest groves, coastal waters, and islands constitute natural temples for local people, and are protected as such for diverse spiritual and sacred reasons. Sacred Natural Sites are key components of the spiritual connections between traditional peoples and the universe, and play a key role in the vitality and survival of indigenous and traditional cultures.

Although published literature points to the high biodiversity and cultural values of many SNS around the world, globally there is only limited quantitative and scientific data on their biodiversity and cultural significance (Oviedo and Maffi 2000; Jeanrenaud 2001; Oviedo 2003; UNESCO 2003; Luque and Robles 2006; Otegui-Acha 2007). To our knowledge, there have been no previous attempts to develop a methodology to systematically inventory SNS at the national level, using as a basis an analysis of both ecosystem and habitat types. The United Nations Environmental Program on World Conservation Monitoring Centre has recorded some SNS, but its database is limited; at the national level, there is no systematic information and literature that documents SNS in a more detailed way from the conservation perspective. Therefore, a large information and documentation gap exists, constituting a major obstacle to ensuring support and effective management of biodiversity and culturally rich SNS worldwide.



Gonzalo Oviedo.



Mercedes Otegui.

In Mexico, SNS can be considered an expression of the country's biological and cultural richness. To date, and despite many external threats and challenges, many of these sites are managed to continue to protect natural, cultural, and spiritual values of the communities. However, little is known about their number; distribution; owner or manager communities; state of conservation; management approaches; legal status; pressing threats; or natural, cultural, and spiritual characteristics; and other information. It is presumed that many formal protected areas in Mexico include SNS within its boundaries.

Such gaps in knowledge do not allow for appropriate planning, action, and support for the conservation and sustainable management of SNS. As a result, many will likely disappear before they are known or registered. The situation of most countries in the world is not too different from that of Mexico regarding the lack of knowledge regarding SNS. Therefore, there is a need to register, document, recognize, and support those existing SNS currently lacking support and



Figure 1—A Seri shaman (Comcaac) lives in the Sonoran desert near the Sea of Cortez (Gulf of California). Photo by Alonso Martinez Jimenez.

exposed to innumerable threats, while respecting both the desire for secrecy and the custodians' right to control the data collected from such sites.

In response to this knowledge gap, experts participating at the Fifth World Protected Areas Congress in 2003 and similar meetings have reiterated the usefulness of building up registries of SNS, based on voluntary disclosure and informed consent of their traditional owners and managers. It is noted that building up such inventories is not a simple task. On the one hand, all the concerned communities need to be contacted, informed, consulted, and their consent sought; on the other hand, appropriate tools and methodologies are needed, from consultation and consent protocols to classification criteria and matrices. Tools and methodologies need to be

developed, although some existing instruments could be adapted for this purpose.

The Biocultural Unit of Pronatura Mexico has developed a methodology and tools for systematically inventorying SNS that is based on an analysis of ecosystem and habitat types. Mexico, due to its cultural and biological richness, the SNS it contains, and its ample and documented experience in protected areas and other conservation strategies, as well as in the studying of indigenous and traditional cultures, is a very appropriate host country for testing a methodology and tools leading to the eventual creation of a national inventory of SNS.

Working Assumptions

The term *Sacred Natural Site* (SNS) is used in the methodology to mean

“sacred entities that are venerated and held in awe while acting as a linkage between nature and culture/spirituality for the communities involved.” Thus, whereas the term may refer to sites of spiritual importance, it also encompasses places that are of symbolic significance—where space, place, memory, and spiritual meaning come together.

Other key working assumptions for developing the methodology were:

- **SNS of indigenous and traditional peoples:** the methodology focuses on the SNS of indigenous and traditional peoples, currently “in ritualistic use,” rather than sacred sites of the world’s major faiths. The relationship between the SNS of indigenous and traditional peoples with the world’s major faiths has had in some cases a complex and troublesome history. Many traditional SNS have been appropriated or destroyed because they were considered pagan or idolatrous by newly emerging world faiths. In some instances, religious buildings were forcefully superimposed upon traditional sites.
- **SNS is a viable concept for biocultural conservation:** the methodology is to concentrate on SNS that possess and combine both a spiritual and cultural significance and biodiversity value. The methodology targets SNS on the basis of their contributions to biodiversity, regardless of their state of naturalness. This working approach has dual consideration of cultural and spiritual features and environmental significance.
- **SNS and protected areas:** the methodology seeks to identify SNS located both within and outside the boundaries of legally designated protected areas. Many

Sacred Natural Sites are key components of the spiritual connections between traditional peoples and the universe, and play a key role in the vitality and survival of indigenous and traditional cultures.

times when integrated into protected areas, SNS lack the recognition of the government agencies managing these areas. When located outside these protected frameworks, SNS face many threats and pressures to their very existence.

- **The secrecy of the sacred:** many SNS are secret to a community at large, or to a specific gender or age group, so their existence cannot be revealed and their secrecy compromised. The methodology respects the confidentiality of such sites and proposes to conduct the inventorying of *only* those sites disclosed on a voluntary basis by the indigenous and traditional communities involved. Pronatura Mexico as an institution is particularly committed to this principle.

Why Support the Conservation of SNS?

Most SNS are effective and viable conservation mechanisms in their own right. This assumption is based on the following evidence:

- **SNS conserve biodiversity:** Many SNS of indigenous and traditional peoples are areas of great importance for the conservation of biodiversity because the reasons for protecting their lands, their spiritual connections, the Earth, and biodiversity are inseparable. In most cases, a deep and well-rooted sense of sanctity or sacredness, established and strengthened through several hundred years of contact with, observation of, and learning about the functions of a Sacred Natural Site, has assured the survival of such habitats in an almost pristine state due to self-imposed restrictions in use and access.
- **The role of SNS in protecting**



Figure 2—A Seri shaman with Tiburon Islands in the background, in Mexico's Sea of Cortez. Photo by Alonso Martinez Jimenez.

nature: The main objective of the traditional management of SNS is to maintain their separateness or sanctity by controlling access to them and applying use restrictions. This is achieved largely through the strength of spiritual beliefs and social rules and norms. Active physical policing of sacred places by custodians has tended to be more the exception than the rule. More commonly, taboos and other religious observations have been applied, a sort of “spiritual police,” regulating access to a small circle of people and promoting appropriate conduct at the sites, threatening dire punishment from the spirit world for those who disobey the rules. These cultural restraints have proven fairly effective in reinforcing self-restraining among individual members of the group. If a breach does occur, purposely or not, intervention or intercession by spiritual leaders would be required to ward off harm to the trespasser. As a consequence of their taboo status, access, and use restrictions, most

SNS have served as important reservoirs of biological diversity, preserving unique and rare animal and plant species.

- **Value of SNS for ecological research and protection:** In some areas, SNS are valuable sources of genetic material for rehabilitating degraded ecosystems and can serve as indicator sites in assessing the potential primary vegetation of highly eroded ecosystems. When, and if, any original vegetation is left “untouched,” SNS could eventually give an idea of the area’s climax or subclimax vegetation. Again, the literature shows that these sites have survived environmental destruction because they are deeply embedded in local cultures and traditional belief systems, becoming sanctuaries for rare or endangered species.
- **SNS support indigenous and traditional peoples’ ways of life:** SNS are important for the vitality and survival of indigenous and traditional cultures and their associated values. SNS conservation further promotes and is intrinsically



Figure 3—Some Himalayan mountains are sacred sites for different religious and cultural groups. Photo by Alonso Martinez Jimenez.

associated with indigenous and traditional peoples' heritage, cultural identity, linguistic diversity, livelihoods, traditional ecological knowledge, and human rights issues.

Rekindling Interest in the Sacred

Ideas of the spiritual and sacred are not new within international conservation. As Jeanrenaud (2001, p. 11) points out, "Early conservationists were often inspired and awed by what they termed the wisdom of wilderness and the infinite capacity of nature to uplift the human spirit." Such values were frequently invoked and appealed to in the early protected-areas movement. However, although early conservation efforts were undertaken for the benefit of humankind, as part of the universal human heritage, SNS of indigenous and traditional peoples were either overlooked or alienated from indigenous peoples as they were assimilated into parks or even destroyed (Jeanrenaud 2001).

The current international policy discourse on protected areas and the

programmatic themes of international organizations pay scant attention to intangible and spiritual values: some notable exceptions are the World Heritage Convention and the UNESCO Biosphere Reserve Program. There is a growing appreciation within the international conservation movement of the need to *reengage* with the sacred (Jeanrenaud 2001), thanks to groundbreaking initiatives, such as that promoted by the IUCN's World Commission on Protected Areas (WCPA) via its Task Force on Cultural and Spiritual Values. This does not preclude scientific knowledge or approaches, but rather encourages the idea that nature can be contemplated in ways that are more significant to people; in short, nature's many dimensions provide opportunities to engage with people in a wide array of meaningful, and some intangible, ways (Jeanrenaud 2001; Harmon and Putney 2003).

Hence, there is a need to make explicit the *intangible values* that impact the way we perceive, select, establish, and manage protected areas without trying to force them into some sort of scientific, ethical, or economic frame-

work. Indeed, it is hoped that an increased recognition of the full spectrum of protected areas' intangible values will generate increased public support and improve the process of selecting and managing them, while opening an opportunity for the general public to appreciate the role performed by SNS (Harmon and Putney 2003).

Developing a Methodology and Tools

The proposed framework for implementing the methodology and tools is divided into five distinct phases:

1. Initial evaluation leading to a situational analysis;
2. Potential SNS distribution areas resulting from applying different criteria based on a GIS-based methodology;
3. Field prospecting and eventual inventorying of those SNS identified;
4. Information Compilation Phase; and
5. Final results dissemination.

In each of these phases the methodological steps and tools used are identified and explained, together with the participating key stakeholders. The time invested in each phase is specified together with benchmarks for monitoring and assessing progress up to the eventual completion of the implementation of this framework (see table 1).

Benefits of This Research Project

This project is the first systematic approach at a national scale to develop, test, and implement a methodology and tools for inventorying SNS based on an ecosystem and habitat types approach. The project serves as an instrument to increase the understanding of the value of SNS and the need for their protection, and will:

- empower Mexican indigenous and local communities with key information to allow them to devise better strategies and tools to protect their SNS, and to gain support from national and international agencies;
- provide a tool for relevant national conservation authorities and agencies to assess the importance of SNS and their distribution, and discuss their future viability within and outside protected area networks;
- contribute to the creation of a national enabling environment to ensure the protection of SNS by increasing awareness among stakeholders and the general public about their conservation;
- offer indigenous and community

Table 1—Proposed implementation framework of a methodology and tools for inventorying Sacred Natural Sites

Methodological steps proposed	1. Evaluation phase		2. Potential SNS distribution sites/areas phase		3. Prospecting and inventorying phase	4. Information compilation phase	5. Results dissemination phase
			Coarse filter criteria	Fine filter criteria			
Tools to be used	<ul style="list-style-type: none"> • Bibliographical review • Key stakeholders questionnaires • Open-ended interviewing • Development of research protocol 		GIS mapping	GIS mapping	<ul style="list-style-type: none"> • Registration Template • MoU • FPIC 	Excel Database	<ul style="list-style-type: none"> • Guidelines on how to apply the methodology • Webpage • Publications • Bulletins • Magazines
Key stakeholders involved	<ul style="list-style-type: none"> • Conservation • Government • Indigenous • Cultural • Research • Academic 	Representatives	<ul style="list-style-type: none"> • Conservation actors • GIS specialists • Researcher(s) 	<ul style="list-style-type: none"> • Conservation actors • GIS specialists • Researcher(s) 	<ul style="list-style-type: none"> • Indigenous and traditional • Rightful representatives • Researcher(s) • Government authorities 	<ul style="list-style-type: none"> • Researcher(s) and associated institution(s) • Database expert • Ind. and trad. rightful reps. • Government Reps 	Various venues at the national, regional, and international level
Duration	3 months		3 months		12 months	2 months	6 months plus long-term dissemination activities
Benchmarks	<ul style="list-style-type: none"> • Questionnaires completed and evaluated • Protocol developed and ready for implementation 		<ul style="list-style-type: none"> • Thematic GIS maps produced and final map detailing potential distribution of SNS resulting from applying coarse and fine filters 		<ul style="list-style-type: none"> • SNS information captured • MoU accorded upon and implemented • FPIC accorded upon and implemented • Community rightful reps. participating in project 	<ul style="list-style-type: none"> • Database on registered SNS 	<ul style="list-style-type: none"> • Dissemination tools implemented

organizations, the conservation community, and other decision makers of the country a methodology and set of tools that increase the availability of information at the national level; and

- offer the opportunity to link the information collected to worldwide databases aiming at similar objectives of protecting SNS based on the communities' voluntary disclosure of information.

The Challenges Ahead

The management conditions of most SNS are difficult as they face many challenges and have little resources to address them, especially considering the lack of enabling legal, political, and institutional mechanisms. There is a need for effective action to support the preservation and effective management of SNS that will have a large impact on enhancing biodiversity conservation, as well as on the long-term vitality of the cultures that created them (see table 2). A multifaceted and strategic approach is required to effectively contribute to the protection of biodiversity, related cultural and spiritual values, traditional knowledge, and belief systems in SNS. The best approach seems to be one where an enabling environment is pursued, globally and nationally, so that all actors involved in biodiversity conservation recognize the value of the issue and are prepared to mobilize resources and efforts to support it. This approach:

- Strengthens legal and policy frameworks to promote and improve the laws, policies, instruments, and institutions that enable the protection and long-term management of SNS, on the basis of principles that respect the human and cultural rights and interests of the communities.

- Improves and supports capacity building for indigenous peoples' institutions to protect and sustainably manage SNS, while building up strategic alliances with relevant public and private institutions.
- Broadens the availability of lessons and field-tested tools from improved management of selected case sites, while developing field-tested tools that can be further

applied nationally and locally, as well as potentially worldwide.

- Builds up on the body of information and knowledge as the basis for action to increase the level of awareness of the conservation community, including government agencies. There is a need to register, document, recognize, and support existing SNS by establishing a global registry of such places, based on their voluntary

Table 2—Summary of recurrent characteristics of Sacred Natural Sites of indigenous and traditional peoples (Jeanrenaud 2001; Otegui Acha 2003; Oviedo and Maffi 2000)

- Sense of sacredness, awe, secrecy, worshipping, benevolence, and respect associated with sacred entity
- Identifiable spiritual/cultural authority in charge
- Currently "under ritualistic use" versus those archaeological sites that may be sacred though no longer in active use by a community
- Limited access and restricted use usually linked to taboo and prohibitions related to resident deity/creational myth
- Occasional and sustainable contributions to local livelihoods guided by traditional ecological knowledge practices
- Can be the object of worship for various ethnic groups
- Variable size
- Some destroyed and/or under peril by institutionalized religions (except some Eastern traditions)
- In most cases, conflictive relationships with traditionally established Protected Areas Systems
- Variable land tenure
- Rich cultural, ethnic, and linguistic diversity
- High degree of acceptance and respect from communities: deeply embedded in traditional belief systems
- Some in search for appropriate legal protection
- An anchor for cultural identity and social cohesiveness
- Important value for biodiversity conservation, for example:
 - as areas of high biological diversity
 - as sanctuaries for rare or threatened species, some of which are considered to be sacred
 - as gene pools
 - as vegetation islands
 - as sites that protect freshwater sources
 - as indicator sites showing potential natural vegetation in areas subject to environmental degradation (important for the restoration and rehabilitation of degraded ecosystems)

disclosure and prior informed consent. This research article offers a methodological approach and tools to increase the current body of information and knowledge about SNS.

Conclusion

The goal of this project, by the authors and the Biocultural Conservation Unit of Pronatura Mexico, was to develop a methodology and tools and offer these products as effective instruments for conservation actors to further demonstrate and consolidate the potential of SNS as viable biocultural conservation mechanisms. The methodology and tools developed in this project need to be used by national and international conservation authorities, organizations, and funding agencies to test their validity and effectiveness. If proven viable, the methodology and tools proposed will be the stepping stone for SNS inventorying exercises to tackle the current information and documentation gap; otherwise, many SNS are bound to disappear even before they are known or registered. SNS registries must be built based on voluntary disclosure and free, prior, and informed consent of their traditional owners and managers.

We call on all conservation colleagues to offer a fair chance for the concept of biocultural conservation to support those indigenous and traditional conservation methods that, by respecting the inherent sacredness of nature, have proven successful and viable throughout the ages. SNS are a living proof of the inherent sacredness of nature. IJW

References

Harmon, D., and A. Putney. 2003. *The Full Value of Parks: From Economics to the Intangible*. Lanham, MD: Rowman and Littlefield Publishers.



Figure 4—A Tibetan mother and son in cultural clothing. Photo by Alonso Martinez Jimenez.

Jeanrenaud, S. 2001. *An International Initiative for the Protection of Sacred Natural Sites and Other Places of Indigenous and Traditional Peoples with Importance for Biodiversity Conservation*. Gland, Switzerland: World Wide Fund for Nature (WWF).

Luque, D., and A. Robles. 2006. *Naturalezas, saberes y territorios Comcáac (Seri)*. México: SEMARNAT, INE, CIAD.

Otegui-Acha, M. 2003. *Wirikuta: The Wixarika/Huichol sacred natural site in the Chihuahuan desert, San Luis Potosi, Mexico*. In David Harmon and Allen D. Putney, *The full value of parks: From economics to the intangible*, p. 295-310; Lanham, MD: Rowman & Littlefield.

Otegui-Acha, M. 2007. *Developing and Testing a Methodology and Tools for the Inventory of Sacred Natural Sites of Indigenous and Traditional Peoples in Mexico*. Mexico: Pronatura Mexico, Rigoberta Menchu Tum Foundation, and Gland, Switzerland: The International Union for the Conservation of Nature.

Oviedo, G. 2003. *UNESCO/IUCN Working guidelines for the conservation and management of Sacred Natural Sites*. Draft document.

Oviedo, G., and L. Maffi. 2000. *Indigenous and Traditional Peoples of the World and Ecoregion Conservation: An Integrated Approach to Conserving the World's Biological Diversity*. Gland, Switzerland: World Wide Fund for Nature (WWF).

UNESCO. 2003. *The Importance of Sacred Natural Sites for Biodiversity Conservation*. Kunning, China: UNESCO.

GONZALO OVIEDO, a native of Ecuador, is the senior advisor for social policy at the Headquarters of IUCN and combines his background in anthropology and the environment to address social aspects of nature conservation, including livelihood security, poverty reduction, and social equity; email: gonzalo.oviedo@iucn.org.

MERCEDES OTEGUI has promoted biocultural conservation for many international and national causes with the World Wildlife Fund, IUCN, UNESCO, and now with Pronatura (Mexico), where she heads the Biocultural Conservation Unit; email: motegui@pronatura.org.mx.

A multifaceted and strategic approach is required to effectively contribute to the protection of biodiversity, related cultural and spiritual values, traditional knowledge, and belief systems in SNS.

Ninth World Wilderness Congress in 2009

BY VANCE G. MARTIN

Merida in Mexico's Yucatan is the venue for WILD9, the 9th World Wilderness Congress (WWC). From 6–13 November 2009, up to 1,500 international delegates will convene in *El Mundo Maya* (the Mayan World) to consider, celebrate and act on the important role of wild nature in a prosperous and healthy human society. WILD9's tagline—*Feel, Think, Act* (*Siente, Piensa, Actúa*)—conveys both the Latin flavor of this global congress and its emphasis on “getting things done”.

Planning for this fully bilingual program is well-advanced. Science, business, media, policy, education, and the arts will address the irreplaceable role of wildlands in generating and maintaining the fundamental building blocks of life—carbon, clean water, fresh air, biodiversity—and essential to our economy and health. While the climate negotiators accept that destruction and degradation of forests contribute some 20–25% of global carbon emissions, there is unfortunately a lack of consensus on wild nature in general. Clearly, there are significant carbon implications in the entirety of wild nature—underground, in peat lands, grasslands, and other places. This, combined with the irreplaceable range of ecosystem services provided by wildlands, constitutes a compelling rationale



for wilderness as a critical element in the global response to climate change.

The WILD Foundation (www.wild.org)—founder and steward of the WWC process—is working with WILD9 co-host Unidos para la Conservación (www.upc.org) to coordinate a diverse group of partners and senior advisors from government, science, corporations, communities, education, and the arts. WILD9 will be chaired by Dr. Ezequiel Ezcurra, a well-known and respected ecologist in Mexico, and currently the director of the San Diego Museum of Natural History.

The first two days of WILD9 are the Global Wilderness Forum, composed of plenary sessions focused on geographic reports from around the world; an in-depth look at the Mayan world, its history, and what we can learn from it; major announcements on wilderness objectives by leaders from all sectors; and a cultural program presenting indigenous and contemporary arts, music, dance, photography, and more.

Following a day of exploration and experience in the jungles, beaches

and archeological sites of *El Mundo Maya*, delegates reconvene for five days of Wilderness Working Sessions. With wild nature and its essential services at the center of the action and practical outputs, the latest models, programs, research and ideas will be presented through plenary sessions in the morning, numerous concurrent sessions in the afternoons (Symposium on Wilderness Science and Stewardship), and an ongoing cultural program.

The WWC is the world's longest-running, public environmental forum, and focuses on the partnership between wilderness and people (*tierras silvestres y el hombre*). WILD9 continues this tradition, keeps respect for the spirit of wild nature at the center of the program, and expands numerous program areas such as the emphasis on youth and young professionals, and the integration of contemporary and traditional conservation knowledge and practice.

For all general information and to register as a delegate, visit www.wild9.org and contact info@wild9.org

For consideration as a participant in the concurrent sessions of the Symposium on Wilderness Science and Stewardship, contact: symposium@wild9.org

VANCE G. MARTIN is the president of The WILD Foundation and a member of the *IJW* editorial board, email: vance@wild.org

Wilderness and Wildlands in Romanian Carpathians

BY ERIKA STANCIU

Coming back from her honeymoon spent in the Retezat National Park in Romania, a real mountain lover from the heart of the Alps said to me: "I could not believe my eyes! There is a place in Europe where one can wander around for two weeks and see no roads, electricity lines, ski slopes—just the vast forest areas and amazing alpine landscapes." Yes, for most Europeans it is difficult to imagine that our small, overcrowded continent still has real wilderness areas. Romania is one of the European champions for wilderness.

The Carpathian Mountains and the Danube Delta are the biodiversity and wilderness hotspots of Romania. Large areas of forests and extended wetland areas in the Carpathians are places where wildlife can find a refuge and where people can enjoy solitude and beauty. Where are these places and how long will we have them? This article will focus on wilderness areas associated with the Carpathian Mountains.

The Romanian word for wilderness is *salbaticie*, describing both the state of wild animals and a deserted, lonely, isolated place, not affected by civilization. If the English term for *wilderness* comes from an old word for wild beast, the Romanian word comes from the Latin adjective *silvaticus*, originating from the word *silva* or forest. The word itself indicates that people in this part of the world have always associated wilderness with forests. Even though forest areas have been shrinking over the centuries, from 80% of the Romanian territory to about 26.7% of the total area of the country, forests are still the core of the last wilderness areas. Looking to the forest map of the country, it becomes obvious that the most suitable places for wilderness associated with forests are the Carpathian Mountains. Some of the amazing places in the Danube Delta are well preserved and protected from everyday human influence, and these are the places that can qualify as wilderness areas.

The Carpathian Mountains range over seven countries—Poland, the Czech Republic, Hungary, Slovakia, Ukraine, Romania, and Serbia (see figure 1). They are the last refuge in Europe for large wilderness areas. More than

one-third of this mountain range, with its geological, biological, and landscape diversity constitutes the backbone of Romania. Compared to other mountain ranges in Europe, the Carpathians are not exceptionally high in elevation. In Romania, the highest peaks are below 2,600 meters (8,530 ft.), and the mountain range is relatively fragmented, cut by deep valleys and with large depressions between peaks and high plateaus. This fragmented landscape was shaped in many areas by extensive agricultural practices, and the natural forests still harbor large areas with little human influence.

Although the wilderness concept does not exist in current Romanian legislation, the term *wild areas* is mentioned in the national protected area law (Government Ordinance nr 57/20.06.07) as core areas to be preserved in strictly protected zones. Large wilderness areas did not receive special attention in Romania until very recently. The first attempts to safeguard wilderness areas were associated with small scientific reserves established in the Carpathians, such as the Gemenele Scientific Reserve in the Retezat Mountains established in 1956 on 1,600 hectares (3,950 acres), or the Pietrosu Mare Scientific Reserve on 3,300 hectares (8,150



Author photo: Erika Stanciu.

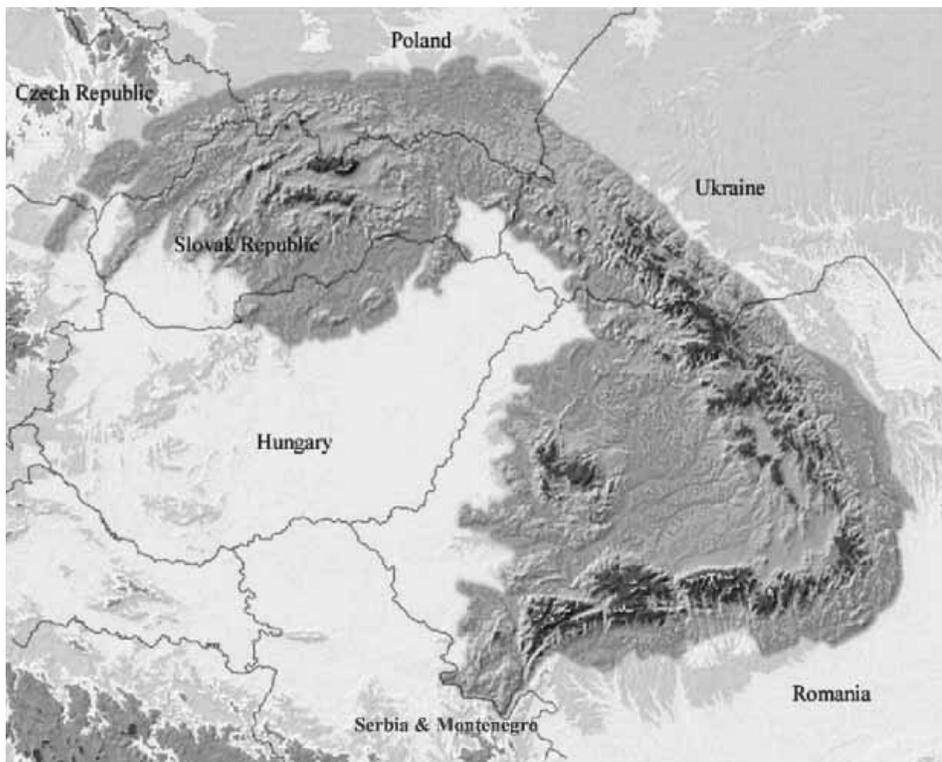


Figure 1—Map of the Carpathian Ecoregion and Romania in Europe.

acres) in the Rodna Mountains. It is difficult to associate these small areas with the wilderness concept, even though some European interpretations of wilderness would include these small areas. Some of the first large areas included in scientific reserves are the ones from the Danube Delta with more than 10,000 hectares (24,700 acres) included in some areas. However, it is noted that these scientific reserves were not created to give people the possibility to enjoy solitude, but more as strictly protected areas, where access is permitted only to a small number of visitors and mainly for research or education purposes.

Most of the large areas that qualify as wilderness areas in the Carpathian Mountains of Romania are included in national and nature parks. The 14 national parks, equivalent of IUCN category II protected areas, have core areas defined in the legislation as “integral protection zones,” where the use of natural resources or any other human

activities, except visitor access, is forbidden. Some of the alpine and subalpine pastures can be used by local communities for grazing to continue traditional activities and to contribute to the maintenance of some specific biodiversity situations. However, areas ranging from a few thousand to 30 or 40 thousand hectares (74,100 to 98,800

acres) of forest landscapes are well preserved in these national parks with little or no human activity allowed. Within these core areas, large tracks of old growth forests are still present.

Only 6.3% of the 6.37 million hectares (15.7 million acres) of forests is old growth, but having more than 240,000 hectares (592,800 acres) of pristine forests and about 160,000 hectares (395,200 acres) of old-growth forests surrounded by natural forests is an exceptional feature in the European context (see table 1) (Giurescu 1975; Giurgiu et. al 2001; Biris et. al 2002; Boisson and Radu 2007). It is important to note that only a very small percentage of the most valuable forests, from a noneconomic perspective, were included in protected areas at the beginning of this decade; therefore, most of the pristine forests were not effectively protected in the long term.

There are initiatives and significant efforts coming especially from the civil society and representatives of the Forest Research and Planning Institute(ICAS) to extend protected areas and include more of the pristine forests and wilderness areas (ICAS 2007). However, there is low acceptance from key stakeholders, such as

Table 1—Total area of pristine forests in Romania (Giurgiu et. al 2001)

Geographical area	Area of old-growth forests		In existing protected areas	
	Ha	%	Ha	%
Danube Delta	300	0.1	228	0.1
Vlasia Plane	1,300	0.5	1,278	0.5
Total lowland	1,500	0.6	1,506	0.6
Hills	3,000	1.2	262	0.1
Eastern Carpathians	54,300	22.1	14,249	5.8
Southern Carpathians	151,200	61.3	20,481	8.3
Western Carpathians	36,600	14.8	42,730	17.3
Total mountains	242,100	98.2	42,730	17.3
TOTAL	246.7	100.0	44.498	18.0

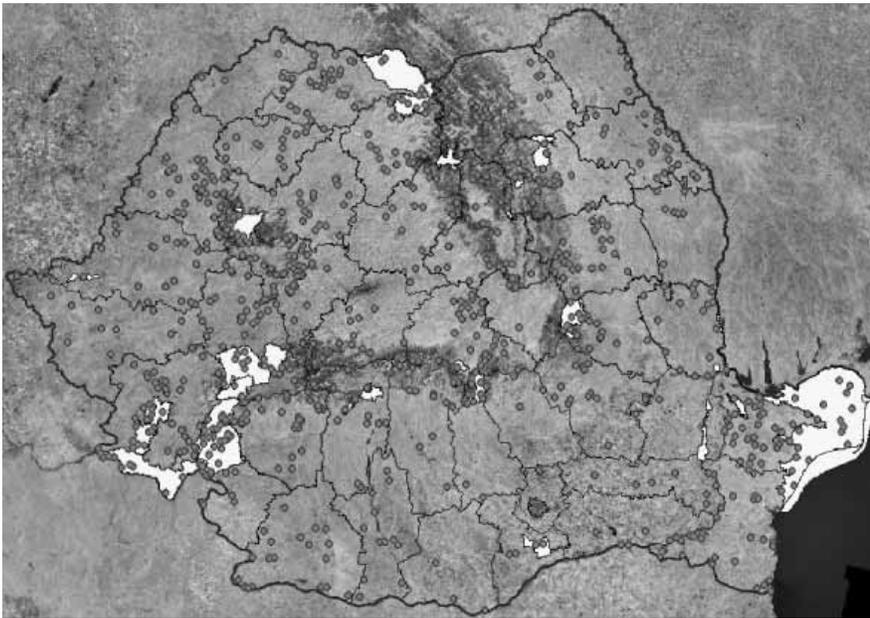


Figure 2—Map of Romanian protected areas at the national level. Light areas are national and nature parks (IUCN category II and V) and biosphere reserves, and dots are reserves and natural monuments (IUCN categories I, III, and IV).
 Source: Ministry of Environment and Sustainable Development, 2007.

local communities and forest managers, which makes it very difficult to have new protected areas established, especially in national parks that are the most suitable management category to preserve wilderness.

The distribution of protected areas established at the national level shows that most of the natural values of the country are concentrated in the Carpathian Mountains and in the Danube Delta (see figure 2). The 13 national parks and biosphere reserves and 14 nature parks are the largest protected areas of the country and the most important for safeguarding the last remnants of wilderness. Some of the 900 smaller protected areas are significant for preserving small bits of untouched nature, but their importance is more for the protection of certain species or very rare ecosystems.

The map of protected areas (see figure 2) shows that the distribution of the last pristine forests are mostly in the national and nature parks found in the range called Southern Carpathians. There is a concentration

of valuable biodiversity and landscapes in the southwest with good legal protection offered by the complex of nine national nature parks and geoparks: Retezat, Domogled Valea Cernei, Cheile Nerei—Beusnita, Semenic—Cheile Carasului, Valea Jiului, Portile de Fier, Gradistea Muncelului—

Cioclovina, Tara Hategului, and Platoul Mehedinti. With more than 500,000 hectares (1.2 million acres) in this corridor, it is the largest area with a legal protected statute not only in Romania, but for most of Europe. Even if these protected areas host large natural and old-growth forests, only 10,000 hectares (24,700 acres) of the pristine forests are within their borders with almost 20,000 hectares (49,400 acres) of the pristine forests from the same part of the Carpathians being outside the borders of the national and nature parks.

This large complex of protected areas covers a large part of the last Intact Forest Landscape (IFL) on the European continent located from the south to the polar circle. A study developed under the coordination of Greenpeace mapped large areas of forest landscape (larger than 500 sq. km, or 193 sq. miles) across the world with no or very low human disturbance. The last “green spot” of IFL on the European map, if Scandinavian countries and Russia are excluded, is located in Romania, in the south-

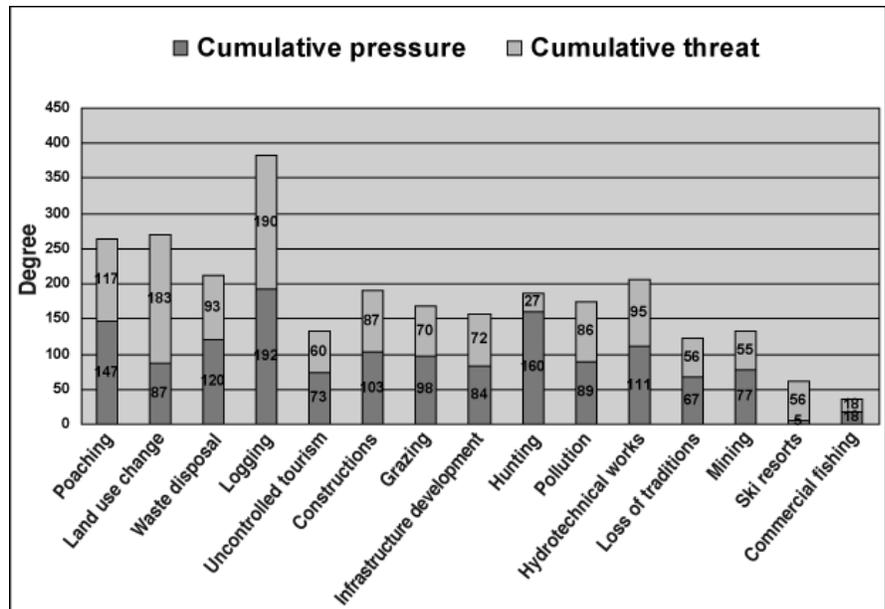


Figure 3—The most significant threats and pressures to protected areas as compiled at the 2003 RAPPAM workshop.

western corner of the Carpathians. Almost 90% of the IFL is already included in existing protected areas, but management measures are not yet adapted to support maintenance of their exceptional values. The IFL concept is not defined and accepted in the Romanian legislation or in the conservation management practices, although the exceptional and unique value of the area was confirmed through a study of the Romanian Ministry of Environment and Sustainable Development. Economic pressures are high on this area, especially from transportation and tourism infrastructure development and forestry. Threats are significant for the IFL and for the Romanian wilderness, even if they were included in a protected area system, and for the pristine and old-growth forests that are not yet legally protected.

In 2001, a group of Romanian and foreign specialists trying to design an ecological network for large carnivores as a tool to secure one of Europe's most representative and healthy popu-



Figure 4—A shepherd family—a grandmother and two sons—in Gradiste National Park, Romania. Photo by A. Beckmann.

lations of brown bears (*Ursus arctos*), wolves (*Canis lupus*), and lynx (*Lynx lynx*) (Maanen et. al 2006). The study identified the following threats to wilderness areas and large areas, including natural forests and other ecosystems,

needed by these keystone species:

1. Land privatization and encroachment, as more than 40% of the Carpathian forests have been fragmented through land restitution and unsustainable management after 1990;
2. Changes in forestry from a “close to nature” style management before 1990 to management that looks more to the economic benefits as determined by the pressure of the newly developed market economy;
3. Changes in agricultural practices such as land abandonment;
4. Hunting and poaching;
5. Stream valley deterioration, with an increasing pressure from hydro-power development in the mountain areas with the commitments of Romania, as a member of the European Union (EU), to reduce the use of fossil fuels; and
6. Very intense development of new transportation infrastructure and associated pollution along the heavily used roads.



Figure 5—Trekking in the old growth beech forest in Retezat National Park. Photo by A. Beckmann.

In 2003, another group of specialists, most of them in charge of the management of national and nature parks identified the same types of threats (Stanciu and Steindlegger 2006). Protected area managers and some of the key stakeholders from the existing protected areas identified the top pressures and threats to protected areas, during a workshop organized by World Wide Fund for Nature (WWF) Danube Carpathian Program (see figure 3). The workshop assessed protected area management at the system level, using the Rapid Assessment and Prioritization Methodology of Protected Area Management (RAPPAM) developed by WWF. For national parks—the most important category for wilderness protection—the greatest threat identified is logging, followed by land use change and hunting and poaching.

These threats are worrying by themselves; however, adding the unfavorable policy environment and weak protected area policies—identified and acknowledged during the RAPPAM workshop by protected area managers—do not help in planning for a hopeful future for protected areas and wilderness in Romania. As a new member of the EU, Romania had to extend areas protected for their biodiversity values, increasing the surface of protected areas from about 8% of the

The Carpathian
Mountains and
the Danube Delta
are the
biodiversity
and wilderness
hotspots
of Romania.

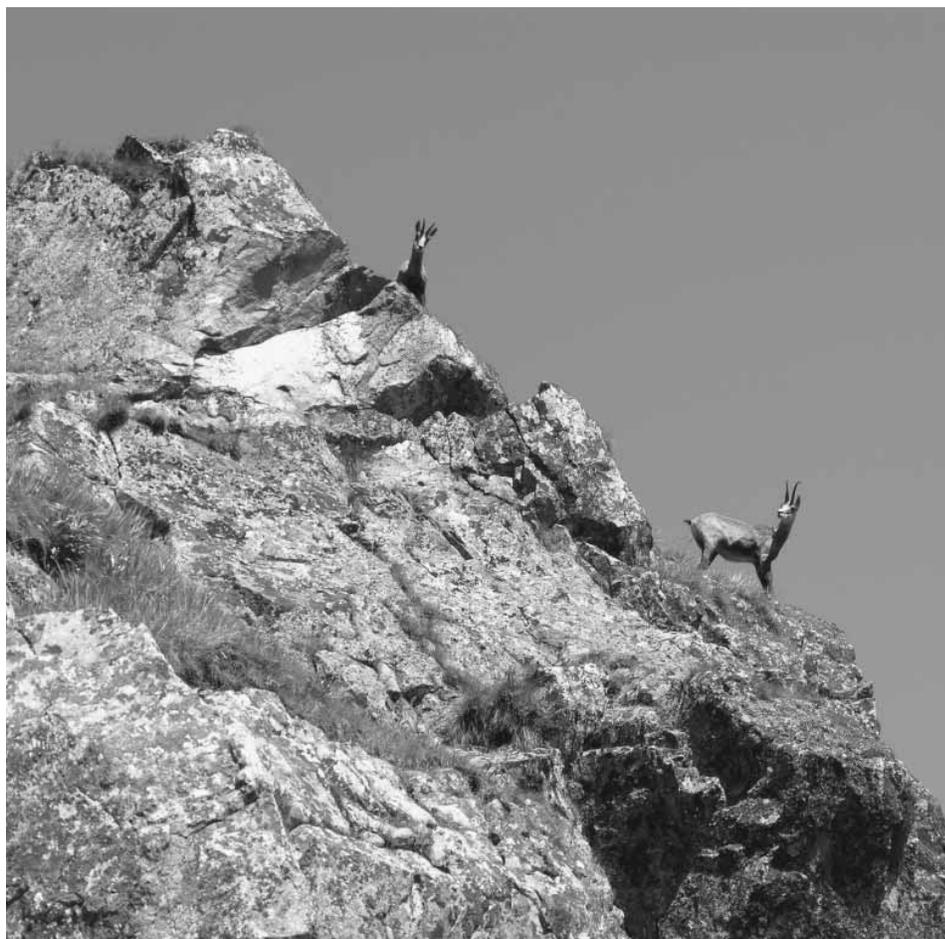


Figure 6—Chamois (*Rupicapra rupicapra*) peer over the escarpment in Retezat National Park. Photo by A. Beckmann.

national territory (i.e., national parks, nature parks, biosphere reserves, nature reserves, and natural monuments) to about 19% with the proposed Natura 2000 sites. These future Natura 2000 sites (new protected areas) were proposed on the basis of EU legislation, with the main objective of addressing the conservation of species and habitats rare and threatened at the EU level. However, wilderness areas are not key for these newly proposed Natura 2000 sites.

The most important considerations for protected area management and for wilderness protection and management are related to financial and human resources. The Romanian government is not allocating, at present, any funds for protected area

management. Also, there is no political and financial support to include all existing pristine forests and the entire Intact Forest Landscape in protected areas. Furthermore, protected area management teams are very young and in need of training and capacity-building programs, and there are no coherent training programs for protected area management.

Despite the unfavorable policy environment and serious lack of resources for maintaining the wilderness areas in Romania, there are some projects that try to find solutions by looking to the values and benefits for key stakeholders to gain their involvement, or even setting up partnerships to promote and use wilderness areas for the benefit of people and local

Threats are significant for ... Romanian wilderness even if they were included in a protected area system.

communities. One of the successful initiatives is the certification of the Retezat National Park in the Protected Area Network (PAN) Parks system and the establishment of a local tourism association that will promote the Retezat wilderness on the European ecotourism market. The Rodna National Park has a good probability of becoming PAN Parks certified in the near future.

There are active conservation organizations supporting protected

areas and the ecotourism concept as well as stewardship of high conservation value forests, thus contributing to the maintenance of wilderness areas, such as the WWF Danube Carpathian Program, the Association of Ecotourism from Romania, and Greenpeace. Efforts to preserve wilderness in Romania and reach decision makers especially at the national level must be in the context of the economic development need to increase and combine on-ground projects that



Figure 7—The unusually high biodiversity of many areas in the Carpathian Mountains has been shaped by centuries of human interaction with the landscape—including grazing, mowing, and fruit cultivation—such as in the Maramureș region. Photo by M. Mihul.

bring financial support with lobbying and advocacy.

References

- Biris, I. A., S. Radu, and Corina Coanda. 2002. *Pristine Forests in Romania: Sanctuaries for Nature and Treasures of Biodiversity*. Bucharest, Romania: ICAS (Institute for Forest Research and Planning), KNNV.
- Boisson, B., and S. Radu. 2007. *Romanian Old Growth Forest: Heritage to Be Preserved/paduri seculare, patrimoniu ce trebuie salvat*. Bucharest, Romania: World Wide Fund for Nature (WWF) DCP.
- Giurescu C. C. 1975. *History of Forests in Romania from the Old Times Till Today*. Bucharest, Romania: Ed. Ceres.
- Giurgiu, V., et. al. 2001. *Pristine Forests of Romania*. Louvain-la-Neuve, Belgium: Ed. ASBL Foret Wallone.
- ICAS, Institute for Forest Research and Planning. 2007. *Study for the Inventory, Mapping and Establishing Sustainable Management Measures for Intact Forest Landscapes*, contract 3188/2007. Bucharest, Romania: ICAS (Institute for Forest Research and Planning).
- Maanen, E., et al. 2006. *Safeguarding the Romanian Carpathian Ecological Network: A Vision for Large Carnivores and Biodiversity in Eastern Europe*. Veenwouden, The Netherlands: A & W ecological Consultants, and Brasov, Romania: ICAS (Institute for Forest Research and Planning) Wildlife Unit.
- Stanciu, Erika, and Gerald Steindlegger. 2006. *Rapid Assessment and Prioritization of Protected Area Management: Methodology Implementation in Romania—Key Findings and Results*. Report available from Erika Stanciu; email: erikas@zappmobile.ro.

ERIKA STANCIU established the first national park administration in Romania while she was in charge of Retezat National Park, and for the last five years has worked with WWF-Europe on projects in four countries of the Danube-Carpathian region: Romania, Bulgaria, Slovakia, and Ukraine; email: erikas@zappmobile.ro.

Announcements

Compiled by Greg Kroll

Wild Sky Wilderness Designated in Washington State

Nearly six years after it was first introduced, a bill to create the Wild Sky Wilderness, northeast of Seattle, Washington, became law in May 2008. Named for the Skykomish River, the new wilderness encompasses 106,000 acres (42,900 ha) of rolling hills, rushing rivers, and low-elevation forests on the west slope of the Cascade Mountains. Located in the Mount Baker-Snoqualmie National Forest, a 90-minute drive from Seattle, the Wild Sky is Washington State's first new wilderness area in 24 years.

Work to protect the Wild Sky was launched over eight years ago, bringing together stakeholders from throughout the Sky Valley and reflecting their input. Nearly 350 Washington elected officials, 180 businesses statewide, more than 150 religious leaders, 29 local hunting and fishing organizations, and more than 30 local and national conservation and recreation organizations supported protecting Wild Sky as wilderness. (Sources: *Seattle Post-Intelligencer*, May 8, 2008; www.wilderness.org/NewsRoom/Release/20080508.cfm)

Land Board Rules Innovative Language Modifies Wilderness Act Intent

The U.S. Interior Board of Land Appeals (IBLA) has ruled on an appeal filed by Wilderness Watch and the Oregon chapter of the Sierra Club challenging the Bureau of Land Management's (BLM) authorization of summertime motorized access to two undeveloped private inholdings within the 170,025-acre (6880 ha) Steens Mountain Wilderness, Oregon. The judges specifically noted that the access language in the Steens Act of 2000 is different from the access language in the 1964 Wilderness Act, ruling that "Congress articulated a different standard in the Steens Act" and "had Congress intended the same standard to apply, it would not have enacted the special provision." According to Wilderness

Watch, this is important because it affirms that putting innovative language into wilderness bills that differs from the language in the Wilderness Act will likely be interpreted by the courts as being different from the intent of the Wilderness Act. Proponents of such bills often argue that the innovative language simply says things in a different way.

The IBLA judges ruled that BLM's wilderness access regulations promulgated under the Wilderness Act do not apply because the different language in the Steens Act is not bound to the standard in the Wilderness Act. The Wilderness Act allows the secretary to grant a landowner "adequate access" to private land inholdings, or a land exchange for other federal land of approximately equal value. In contrast, the Steens Act says, "The Secretary shall provide reasonable access to nonfederally owned land or interests in land within the boundaries of the [wilderness area]." The judges then defined the difference between "adequate" access and "reasonable" access, citing the 1973 Random House *Dictionary*: "Adequate means 'barely sufficient or suitable,' whereas reasonable means 'not exceeding the limit prescribed by reason.'" "Adequate," therefore, sets a very narrow standard, whereas "reasonable" creates a broad standard, giving the agencies wide discretion in deciding what mode and frequency of access to allow. (Source: www.ibldecisions.com/Ibla/Ibldecisions/172IBLA/172IBLA027.pdf; www.wilderness.net)

Climate Change Threatens Western U.S. National Parks

"A climate disrupted by human activities poses such sweeping threats to the scenery, natural and cultural resources, and wildlife of the [U.S.] West's national parks that it dwarfs all previous risks to these American treasures," according to the July 2006 report, *Losing Ground: Western National Parks Endangered by Climate Disruption*.

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

The West is warming faster than the East, and the region's national parks are among the places where the changes in the natural environment will be most evident.

The report identifies the top 12 western national parks most at risk:

- All the glaciers in Glacier National Park (Montana) could melt away by 2030. North Cascades National Park (Washington), which contains 60% of the land covered by glaciers in the continental United States, is losing its glaciers.
- The typically snow-covered peaks of Glacier, Grand Teton (Wyoming), Mount Rainier (Washington), North Cascades, Rocky Mountain (Colorado), and Yosemite (California) National Parks could be barren of snow when most visitation occurs during the summer. Warmer winters may no longer provide the natural check on populations of mountain bark beetles, endangering whitebark pine forests that provide one of the most important food sources for grizzly bears in Yellowstone National Park (Montana, Wyoming, Idaho).
- Areas of alpine tundra could be reduced or eliminated, including Rocky Mountain National Park, which contains the largest expanse of tundra in the United States south of Alaska.
- Increasing high temperatures and drought are already threatening to eliminate entire forests at renowned historical and archaeological sites, including Bandelier National Monument (New Mexico) and Mesa Verde National Park (Colorado).
- Death Valley National Park (California), which already averages summer temperatures higher than 100 degrees Fahrenheit (38

degrees Celsius) is likely to become intolerably hot for visitors for long stretches of the year.

- Beaches and other coastal areas of parks such as Golden Gate National Recreation Area (California) have been judged by the U.S. Geological Survey to be highly vulnerable to sea-level rise resulting from global warming.
- Reduced snowfall and snowpacks, earlier snowmelt, and increased drought may seriously affect the range and populations of trout and other coldwater fish in Glen Canyon National Recreation Area (Utah, Arizona).

The report concludes that higher temperatures in the West's mountain areas are likely to sharply reduce the presence of meadows and wildflowers, while forests will push up to higher elevations, endangering mountaintop species such as ptarmigan, pikas, and desert bighorn sheep. (Source: www.nrdc.org/land/parks/gw/gw.pdf)

Wilderness Champion John Seiberling Dies

Ohio "New Deal" Democrat John Seiberling has died of respiratory failure at 89. As chairman of the Interior Committee's public lands and national parks subcommittee, Seiberling pushed 33 bills for 250 new and expanded wilderness areas in 27 states. In 1980, he and U.S. Representative Morris Udall (Democrat from Arizona) led the fight to establish federal protection for 103 million acres (42 million ha) under the Alaska National Interest Lands Conservation Act (ANILCA). In all, Seiberling played a key role in the preservation of 69 million acres (28 million ha) of wilderness, including 54 million acres (22 million ha) in Alaska, in addition to 59 million acres (24 million ha) of other federal parks, forests, and pre-

serves. He also spearheaded the creation of Cuyahoga Valley National Park in 1974. (Source: *Ohio Akron Beacon Journal*, August 3, 2008)

African Parks Network Withdraws from Ethiopia

The African Parks Network (formerly the African Parks Foundation) has requested the early termination of its park management agreements with the Ethiopian government, citing hostility and possible legal challenges from human rights non-governmental organizations (NGOs). According to the web page of the African Parks Network (APN), they are "an African solution to Africa's conservation challenge." The Netherlands-based organization states it is the first private park management institution in Africa to take on long-term management responsibilities via public-private partnerships with governments "by combining world class conservation practice with business expertise." The APN seeks to place emphasis "on the stimulation of responsible tourism and associated private enterprise as a mechanism for achieving financial sustainability."

Human rights organizations (principally Survival International and Native Solutions to Conservation Refugees) have voiced concern that APN's plans to manage Omo National Park would evict tribal people from their ancestral lands, or cause them to lose access to vital agricultural and grazing land. In addition, APN's withdrawal from Nech Sar National Park will relinquish the Ethiopian government's obligation to remove the Guji tribe from those lands.

The African Parks Network states that there are eight distinct ethnic groups (which are hostile to each other) living in or utilizing Omo National Park, and that wildlife has been decimated other than in the "no-

man's land" between the different ethnic groups. APN claims that the only chance of securing a sustainable future for Omo and the people dependent on the ecosystem is to negotiate

limits of use of the land and natural resources by each of the different ethnic groups, and that if APN attempts to facilitate such dialogue, the organization will only attract hos-

tility and legal challenges. (Sources: www.africanparks-conservation.com/; and conservationrefugees.org)

Green Charter School Named for Wilderness Icon, Michael Frome



Photo: Michael Frome Academy dedication of a new "green" charter school in Woodbury, Minnesota, September 19, 2008. L to R: Dr. Jim Tangen-Foster (cofounder); Dr. Michael Frome and wife, Jane Eastvold; and Dr. Laurel Tangen-Foster (cofounder).

Wilderness advocate and noted conservation writer, Dr. Michael Frome, has been honored by having a new "green" charter school in Woodbury, Minnesota, named for him: The Michael Frome Academy. The academy is a public charter school, K–8, sponsored by the Audubon Center of the North Woods in Sandstone, Minnesota, but funded through the Minnesota Department of Education.

Among his remarks in school dedication events Frome stated:

This is a joyous day, the celebration of a landmark, both in education and in our relationship with the mother of us all, the Earth.

... My own journey through life has involved a love of nature and the unspoiled outdoors. ... In my writing career, I came to believe in the sanctity and protection of wild places for their own sake, and as a bequest of one generation to generations that follow. ... But new generations are suffering from "a nature deficit disorder." The Internet and related technologies ... components of a modern society obsessed with facts and figures ... has given us power over nature yet smothered us in ignorance about ourselves as part of it. ...

Yes, we should understand the

technology and use it, but not be used by it. ... I hope the Michael Frome Academy will help to rediscover the nature within us. May parents, teachers, and students get outdoors regularly, walk the trails, affirm beauty and sacredness ... listen to rain and wind, learn to appreciate ... the spirit of nature wild and untamed.

I am honored to have this school named for me, and pleased to associate with [cofounders] Dr.'s Jim and Laurel Tangen-Foster, my beloved friends of long standing, as we embark together on a journey of teamwork, trust, learning, and love.

Wilderness Waters Contain High Pack Stock Contamination

According to a five-year study, surface waters in wilderness areas of California's Sierra Nevada mountains where cattle and pack stock are present are at high risk for containing coliform bacteria. In a recently published study in *Wilderness and Environmental Medicine* (authored by Robert Derlet, MD; John Richards, MD; and James Carlson, PhD), selected streams and lakes in the backcountry of Yosemite and Kings Canyon National Parks and neighboring Forest Service wilderness areas were sampled and analyzed for the presence of coliforms (also see Derlet et al., 2008, *IJW* 14(1): 28–31). A total of 364 samples were chosen from five risk categories: (1) areas rarely visited by humans, (2) human day-use-only areas, (3) areas used by backpackers with overnight camping allowed, (4) areas primarily impacted by horses or pack animals, and (5) cattle and sheep grazing tracts.

Coliforms were found in 9% of rarely visited sites, 12% of day-use-only sites, and 18% of backpacker sites. However, 63% of pack animal sites yielded coliforms, and 96% of cattle and sheep areas grew coliforms. All samples grew normal aquatic bacteria. (Source: *Wilderness and Environmental Medicine*, 2008, 19(2): 82–90)

Nature Observed from 15 Feet above the Ground

The proliferation of mechanical devices for transportation poses increasing threats to wilderness management. A new example is the development of inexpensive, low-flying aircraft. "It's what Icarus dreamed of," says John McAfee. "This is really human flight. You are attached to the wing, and you feel every sensation, every movement, every breath of air that goes by." McAfee, the man behind McAfee anti-virus software, is referring to aerotrekking, a sport that involves

skimming the terrain a few feet above the ground. McAfee has spent nearly \$12 million developing a network of seven aerotrekking bases in isolated parts of Arizona and New Mexico. The planes, resembling a motorcycle with ultralight wings, powered by a rear propeller and guided by a steering bar at the pilot's fingertips, have a range of 300 miles (480 km) and can remain in the air for up to five hours.

The Arizona Republic writer Dennis Wagner gushes that "the winged tricycle ... skips over the tips of ponderosa pines and dodges rock formations at 85 mph [135 km/hr] ... visiting wild places that could never be reached on foot or by car." McAfee recalls that the first time he experienced aerotrekking, he knew what this machine was meant for. "You're smelling plants, you're feeling the air, you're 15 feet above a cow. ... Nothing brought me closer to nature than this." (Source: *The Arizona Republic*, August 28, 2007)

Book Reviews

A Handbook on International Wilderness Law and Policy

Edited by Cyril F. Kormos. 2008. Fulcrum Publishing. 408 pp., \$39.00 (hardcover).

Many countries have specialized legislation and policy designed to create designated and de facto wilderness areas. The numerous lessons learned in these national and regional efforts have not been easily available to other countries considering wilderness protection. In response to this need, The WILD Foundation took on the task of collating and describing the efforts of 16

countries around the world in protecting wilderness through legislation and policy; they hoped that such a handbook would aid in the creation of new and improved global wilderness legislation and policy. The book focuses on areas corresponding to the IUCN's Category 1b-Wilderness classification. These areas are said to have three key values—biological, social, and iconic—that no other protected area classification can provide.

The first of four sections in this book provides an overview of the wilderness concept, discusses the

importance of creating law and policy to protect wilderness, and generates a list of compatible, rarely compatible, and incompatible forms of land use. The latter list may be somewhat controversial, as it is primarily based on the American conception of wilderness. For example, grazing is considered rarely compatible, and mechanized recreation is considered incompatible. The first section also provides a useful matrix of international wilderness definitions, legislative purpose, allowed activities, and administration and management of wilderness. As little

discussion of this matrix is provided, this chapter might have been included as an appendix. A related useful addition would be an appendix providing copies of wilderness legislation, or to save space, a list of websites that provided each country's legislation and policy.

The second and largest section of the book provides an analysis of wilderness legislation from 11 countries. I found the discussion in each chapter that outlined the idiosyncratic history and primary issues affecting the creation of wilderness legislation in each nation to be the most interesting reading, and was disappointed not to see additional discussion of each country's limitations and enabling factors that led to the protection of wilderness via legislation. Although beyond the scope of this handbook, it would be interesting to have a global analysis of the critical success (and failure) factors, to allow individuals and groups to learn from these lessons.

The third section reviews wilderness policy from countries in Africa and Europe, and the final section discusses future directions for wilderness law and policy. In the latter chapter, issues such as ocean, indigenous, and private sector wilderness are discussed, and key findings from previous chapters are briefly outlined.

This handbook admirably succeeds in its attempt to provide a state of the art review of global wilderness legislation and policy. I have no doubt that governments and nongovernmental organizations throughout the world would be well served to obtain a copy of this book to aid in their efforts to give wilderness the global protection it deserves.

Review by JOHN SHULTIS, *IJW* book editor; email: shultis@unbc.ca

Taking the Air: Ideas and Change in Canada's National Parks

By Paul Kopas. 2007. University of British Columbia Press. 248 pp. \$32.95, CAD (paper).

A fundamental question with any new book is: Is it useful? Books can be useful for many different purposes, including being beautiful, entertaining, or inspiring. However, for academic contributions, the qualifications are usually a little more prosaic and boil down to whether the book advances a new and important idea or collection of ideas, or succeeds in synthesizing material from other sources in a new and interesting way. After reading Kopas's book analyzing different influences on policy direction in Canada's national parks, I cannot say the idea or collection of ideas is new. However, there is some value in this consolidation of ideas, especially for students and those unfamiliar with the breadth of literature on the idea.

The essential idea underlying the book is sound. Kopas argues that "national park policy at any given time can be explained by understanding the interaction among substantive ideas, institutions and organized interest groups" (p. 187). However, the idea is hardly new. Lowry published his comparative analysis of the different factors influencing National Park Services and policies in the United States and Canada in 1994. In Canada, Dearden and Berg (1993) identified the influence of three main interest groups, entrepreneurs, environmentalists, and aboriginal people, over different time periods on national park decision making.

Kopas essentially does the same but focuses on the period from the mid-1950s to the turn of the century and provides a more detailed examina-

tion within this time period. However, he might have given more attention and credit to the contributions of previous historians of the national parks in Canada including Bella (1987), MacEachern (2001), and McNamee (2002) among others who have also covered this period and made insightful analyses.

It is surprising that Kopas made such efforts to interview sources within the National Parks agency, and add useful detail to the chronicle, and yet paid scant attention to many accessible, published sources. In many ways, this is reminiscent of a PhD dissertation, where students are encouraged to emphasize the "new," but be less forthcoming about existing studies. From a political science perspective there is much to appreciate in this book, including drawing attention to parks as a focus for study. From a conservation perspective, however, it could have benefited from greater integration with the existing literature.

References

- Bella, L. 1987. *Parks for Profit*. Montreal: Harvest House.
- Dearden, P., and L. Berg. 1993. Canadian National Parks: A model of administrative penetration. *The Canadian Geographer* 37: 194–211.
- McNamee, K. 2002. From wild places to endangered spaces: A history of Canada's national parks. In *Parks and Protected Areas in Canada: Planning and Management*, 2nd ed., ed. P. Dearden and R. Rollins (21–50). Toronto: Oxford University Press.
- MacEachern, A. 2001. *Natural Selections: National Parks in Atlantic Canada, 1935–1970*. Montreal: McGill-Queen's University Press.

Reviewed by PHILIP DEARDEN, professor and chair, Department of Geography, University of Victoria, Canada; email: pdearden@office.geog.uvic.ca.

Guidelines

For Contributors to *IJW*

EDITORIAL POLICY

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

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

MAJOR TYPES OF ARTICLES

1. Peer-Reviewed Manuscripts.

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

2. Editor-Reviewed Manuscripts

• **Feature Manuscripts.** These are reports of wilderness-related stewardship, planning, management, international, and education issues presented in a factual manner. Sections reporting recommendations and implications are encouraged. Photos, with captions illustrating key points in the submitted text, are strongly encouraged. The target length for a manuscript is 2500 words which requires a

clear focus, clarity, brevity, and logic in writing.

- **Letters to the Editor and Commentaries** consist of a reasoned argument (approximately 500 words) on an important wilderness issue, such as a research program, a change in administrative procedure, etc. and may culminate in recommendations or proposals for some action. Photos with captions are encouraged.
- **Announcements and Book Reviews.** Announcements of meetings and important events, photos, administrative policy updates, major personnel changes, and special event information are welcome for the "Wilderness Digest" section. Send materials for the Digest directly to *IJW* Editor Greg Kroll at wildernessamigo@yahoo.com. Suggestions for books to review are welcome, but book reviews are solicited by the Book Review editor, John Shultis.

STYLE AND FORM

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

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

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

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

affiliation, location, mailing address, telephone number, and e-mail address.

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

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

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

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

QUESTIONS AND SUBMISSIONS

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

Chad P. Dawson
Managing Editor
International Journal of Wilderness

SUNY College of Environmental Science
and Forestry
320 Bray Hall
One Forestry Drive
Syracuse, NY 13210

Telephone: 315-470-6567
Fax: 315-470-6535
cpdawson@esf.edu