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—John C. Hendee
IJW Editor-in-Chief

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FRONT: Resplendent Quetzal (*Pharomachrus mocinno*) male at nest hole—Rapid Assessment Visual Expedition (RAVE), El Triunfo Biosphere Reserve, Sierra Madre range, Chiapas, Mexico. Photo © Thomas Mangelsen

INSET: Coffee worker in Ejido Santa Rita, El Triunfo Biosphere Reserve. Photo © Patricio Robles Gil

International Journal of Wilderness

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

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EDITORIAL PERSPECTIVES

Wilderness Is on the Move!

BY VANCE G. MARTIN

The year 2008 holds exciting prospects for wilderness internationally, with progress already happening or imminent in many countries.

The U.S. presidential race is the most diverse and exciting in decades. Because of the many domestic wilderness bills held in abeyance during the past eight years, or others simply in process, if the voters opt for change we may well see significant progress on U.S. wilderness in the next few years.

The potential for wilderness in the United States and elsewhere is also driven by the increased attention to climate change and global warming. Large wilderness areas have an important place in this debate, because of their key role in stabilizing, moderating, and regulating planetary climate. One of the best examples of new potential for protection is the "avoided deforestation" movement, especially in the tropical and boreal forests. Political consensus and action are needed, and the next U.S. president will be presented with many new and significant international opportunities. One indicator of this momentum is the now famous statement that helped end the stalemate in the Bali (Kyoto Protocol) meetings in December 2007, when the U.S. delegation was asked by the representative from Papua New Guinea to "help lead or get out of the way."

Australia has a new prime minister. Alec Marr, director of The Wilderness Society in Australia, tells it like it is: "The Rudd government already have commitments to the protection of wild rivers and World Heritage listing for Cape York, and strong commitments to the protection of northern Australia. We have a strong list of objectives to achieve with this new administration."

The big news is from Canada, as reported in this issue's Wilderness Digest. Harvey Locke gives more details: "The Government of Canada, working with First Nations and NGOs, recently agreed to protect large areas of spectacular wilderness in the Northwest Territories: expanding Nahanni National Park to protect mountains and karstlands totalling about 33,000 sq km; a new national park on the East Arm of Great Slave Lake of 33,000 sq km; Ramparts National Wildlfe Area, 15,000 sq km to protect wetlands for migratory birds; and the sacred lands of Sahoue Edacho peninsulas in Great Bear Lake of 8,500 sq km. Designated wilderness in a matrix of protected area classifications, and more is expected in 2008."

Vance G. Martin

In Europe, although the areas involved are smaller than in Canada, they represent perhaps an even more important change in dealing with age-old attitudes and land management practices. We report in this issue on the superb PAN Parks initiative that is applying excellent criteria and designating wilderness in core zones of parks across the continent, in cooperation with government authorities.

Latin America is full of wildlands spirit, enthusiasm, and progress. The Latin American Protected Areas Conference that meets every 10 years convened in Bariloche, Argentina (see the Wilderness Digest), with an overflow group of more than 2,000 people, surpassing the organizers expectations (and even some of the facilities).

In Guyana, following up on a 2004 declaration in which the government gave the Wai Wai people 1.54 million acres (625,000 ha) of tropical forest, the Wai Wai themselves declared their lands a protected area under

Continued on page 14

The Need for Wilderness Litigation

BY JON DETTMANN

There is a good amount of cynicism about the legal system these days. But the truth is, we have been cynical about litigation for centuries. "The first thing we do," Shakespeare wrote in *Henry VI*, more than 400 years ago, "let's kill all the lawyers." The line has a certain humor—for some, even allure—yet today. Just imagine a civilization without lawyers, without litigation. If we have a dispute, we could talk it through; resolve it like human beings, without the need for a messy lawsuit. How amicable, how nonlitigious life would be!

Wilderness advocates are not immune from this view. Both within and beyond the conservation community, there are frequent accusations that those who want to uphold wilderness protections—often to the detriment of other interests—are too litigious, too willing to run into court over any little issue. The general argument goes that it puts the agencies that steward our public lands in a tough spot. Make any move and run the risk of getting sued, don't make a move and get sued as well—damned if you do, damned if you don't. Surely there is a better way, they say. Surely we can all sit down and resolve these issues like civilized human beings.

But in the case of wilderness—indeed, *especially* in the case of wilderness—such a view is shortsighted, if not outright blind. We should not shy away from lawsuits as a means of defending wilderness over any concern that litigation, in and of itself, is bad. The reasons why begin with the design of our political system. In the U.S. Constitution, the framers established a government of three branches, each one balanced to keep the other two in check. Article I created the legislative branch, vesting it with the authority to make laws. Article II created the executive branch, charging it to faithfully execute those laws. Article III created the judicial branch, authorizing it to hear cases arising under those laws.

This basic governmental structure has a vital implication for wilderness. In Article IV, the Constitution vested Congress with the power to regulate federal lands. The U.S. Supreme Court has found this legislative authority to be so broad as to be virtually limitless. In the Court's words, "neither the courts nor the executive agencies [can] proceed contrary to an Act of Congress in this congressional area of national power."

Under this authority, there are any number of approaches Congress could have taken to preserve certain federal lands as wilderness areas, and more broadly, to create the National Wilderness Preservation System. For example, Congress could have largely turned the issue over to the executive branch, similar to what the Organic Act did with the National Park System. By so doing, Congress would have taken itself out of the business of wilderness preservation. Such a law would only have conveyed a general intent that there be lands preserved as wilderness, but would have left it to the agencies to figure out how to implement that intent.

Such a law would also have largely taken the judicial branch out of play. Because of the doctrine of sovereign immunity, citizens can sue the federal government only when Congress has passed specific legislation allowing them to do so. For litigation over federal public lands, that law is the Administrative Procedure Act, or APA, which allows citizens to sue federal agencies in order to challenge administrative decisions that are either unsupported or unlawful. Under the APA, Congress authorized if not encouraged litigation against federal agencies as a means of insuring that they are faithfully executing the laws for which they are responsible.

But some laws lend themselves better to litigation under the APA than others. For example, courts have commonly viewed the Organic Act as a law that gives the National Park Service broad discretion to manage the National Park System as it sees fit. Because of the broad discretion granted by law, there are very few cases in which a plaintiff has successfully overturned a National Park Service decision under the Organic Act.

Figure 1—Signing of the Wilderness Act on September 3, 1964, by President Lyndon Johnson.

The Wilderness Act of 1964 (P.L. 88-577), however, is a much different statute (see figure 1). It does not grant agencies a broad range of discretion to manage wilderness as they see fit. With the Wilderness Act, Congress got directly into the business of wilderness itself. In fact, the Act is a remarkable federal lands statute because it provides specific and clear directives on what wilderness is and how a system of wilderness is to be created and maintained. For established areas, the Act imposes a statutory structure with detailed requirements—such as no vehicles, no structures, and no commerce—along with a strict, overarching mandate to preserve wilderness character. These directives effectively remove the discretion that land management agencies might normally enjoy.

The benefit of this approach is that it puts wilderness squarely within the checks and balances of the three branches. The legislative branch passed a law directing how the executive branch is to preserve wilderness. The executive branch must faithfully execute that law. To the extent that it fails to do so, the judicial branch must step in to mend the breach. Take out that last step, and the balance is lost, and along with it, an important check on the executive branch, as well as an important protection for the wilderness system.

The involvement of all three branches in wilderness stewardship should never be seen as one that hamstrings or punishes those agencies that steward our wilderness system. Our government is, after all, an enterprise of human beings, who by their nature are not perfect, have their own opinions, and can reasonably disagree. Our system of government seeks to resolve conflict by creating a forum for intelligent, civilized debate moderated by a judge vested with the power of the sovereign. The whole idea of litigation is to allow two disagreeing parties to come to a neutral authority that reviews the evidence and decides the case. The whole point of the judicial branch is to resolve conflict, not to create it.

What better opportunity is there to advocate for the values of wilderness than through the judicial process? What more reasoned approach exists by which wilderness advocates can air their disagreements with agencies to an authority that is obligated to follow and enforce the law as it is written? Such a forum lends itself particularly well to a statute such as the Wilderness Act. It is hard to find a clearer definitive statutory command than, for example, there shall be no use of motor vehicles in wilderness. It is often far more appropriate for a court to interpret and enforce such language against the agency than it is for parties, acting in the name of compromise, to sit down with the agency in order to privately negotiate their own interpretation.

Litigation enables a broader public accounting of the issues as well as a broader understanding. One challenge of a law such as the Wilderness Act is not so much the words on the page as it is the rationale behind them. The meaning of "no motor vehicles" is obvious to everyone, but the reason *why* may not be. It requires an understanding of both the interworkings of the act's terms, as well as the philosophies and ideals underlying those terms—as the draftsman of the act, Howard Zahniser (see figure 2), put it, the *need* for wilderness itself. Wilderness litigation can remind us of the *why*. In his essay, "The Need for Wilderness Areas," Zahniser (1956) recognized that within the many les-

Figure 2—Howard Zahniser wrote the first draft of the wilderness bill in 1956.

The involvement of all three branches in wilderness stewardship should never be seen as one that hamstrings or punishes those agencies that steward our wilderness system.

sons of wilderness were "the lessons of history—a stimulus to patriotism of the noblest order—for in the wilderness the land still lives as it was before the pioneers fashioned it and from it the civilization we know and enjoy." The Declaration of Independence itself recognized that our self-evident rights—life, liberty, and the pursuit of happiness—are derived from the state of nature. By litigating wilderness issues, we are protecting a system of lands—and specifically, the wilderness character of those lands, be they forests, mountains, deserts, or plains—that allowed our system of government to occur in the first instance.

Over time wilderness litigation acts as a continuous test of the Act itself.

Likewise, every judicial decision, no matter how minor, helps to build upon a greater body of law. Lawsuits over wilderness are never limited to the issue at hand. No lawsuit is an island. Rather, each one seeks an interpretation of the Act that will exist in perpetuity, one that can be applied to or distinguished from related issues as they arise, throughout the entire wilderness system. Over time wilderness litigation acts as a continuous test of the act itself. If federal courts find the Act's protections to be lacking, infirm, or unclear, then that is a strong signal that the legislative branch needs to revisit those protections so that wilderness will also exist in perpetuity.

As for whether there can be *too much* wilderness litigation, the practicalities of litigation are an effective if not overreaching deterrent. Lawsuits are difficult. They require an immense investment of time and resources, and no matter the issue, they are always difficult to win. Plaintiffs must all be careful to consider the merits of every lawsuit in advance, to determine whether the issue at stake is worth fighting for, whether there are sufficient resources to see it through to the last appeal, and whether a good or bad outcome will enhance or inhibit the greater aspects of the cause. No one who takes litigation lightly will advance their mission, either by rushing to the courthouse for any minor dispute, or refusing to do so for any dispute.

It is still wise to be wary of litigation, and even of lawyers. But we should do so in the right way, one that bears in mind the vital importance of the judicial branch to matters of wilderness preservation. Wilderness needs litigation. Without it, the very resource we seek to protect is destined for the same fate as Henry VI.

Acknowledgment

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U.S. Forest Service Litigation

The Wilderness Act and Wild and Scenic Rivers Act: 1989–2004

BY ROBERT W. MALMSHEIMER, CORALINE FALCO, AMANDA M. ANDERSON, DENISE M. KEELE, and DONALD W. FLOYD

Abstract: We located and analyzed all U.S. Forest Service (USFS) land management litigation based on the Wilderness Act (TWA) and Wild and Scenic Rivers Act (WSRA) from 1989 to 2004. The agency was slightly more successful in WSRA cases than in TWA cases, but it was less likely to lose and more likely to settle a WSRA case than a TWA case. Cases were geographically dispersed throughout the country. Plaintiffs initiated most TWA litigation, and all WSRA litigation, to limit Forest Service management activities. The research provides managers with the first evaluation of USFS wildlands and rivers litigation.

Introduction

Management of the United States' wildlands and rivers is in the public interest. Yet it was not until 1964 that Congress officially recognized in the Wilderness Act (TWA) the necessity of "securing for the American people of present and future generations the benefits of an enduring resource of wilderness" (16 USC §2a), and not until four years later in the Wild and Scenic Rivers Act (WSRA) that Congress sought to preserve "selected rivers or sections thereof in their free-flowing condition" (16 USC §1b).

These special use statutes posed challenges for federal land management agencies. Although the Forest Service, Bureau of Land Management, National Park Service, and Fish and Wildlife Service had developed agency-specific restrictions for wildlands and rivers before these statutes were enacted, these agencies managed most of their lands according to their multiple-use or resource protection/ recreation use mandates (Hendee and Dawson 2002). Additional decision-making statutes, such as the National Environmental Policy Act (NEPA), and substantive statutes, such as the Endangered Species Act (ESA), enacted after 1970 further complicated agencies' management of these lands.

Parties dissatisfied with federal land management agency management decisions have increasingly used federal courts to try to reverse management outcomes (Wenner 1982; Clarke and McCool 1996). Although TWA and the WSRA have served as the basis for some of this litigation, we have almost no information about cases based on these two preservation statutes. This article addresses this deficiency by examining all TWA and WSRA litigation initiated from 1989 to 2004 involving one U.S. land management agency, the USDA Forest Service.

Robert W. Malmsheimer.

After discussing our limited knowledge of these cases and explaining the methods we used to locate and analyze these cases, we examine case characteristics and offer explanations for the Forest Service's success. Our analysis provides wildlands and rivers managers with the first overview of Forest Service TWA and WSRA litigation.

The Wilderness Act and the Wild and Scenic Rivers Act

Although U.S. federal land management agencies had designated some of the lands under their management as "wild" and "wilderness" prior to 1964, the Wilderness Act (16

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U.S.C. §1131-36) provided: (1) a unified federal land management classification scheme for these lands; (2) a process for adding additional lands into the National Wilderness Preservation System (NWPS); and (3) a systemwide congressionally mandated management framework (Coggins et al. 2002; Hendee and Dawson 2002). In addition to including a number of compromises on mining, motorized equipment and vehicles, grazing, commercial enterprises, fire control, and other activities in wilderness areas, the act provided that all NWPS lands "would continue to be managed by the same agency that administered [those lands] ... before [their] wilderness designation" (Coggins et al. 2002, p. 1110; Hendee and Dawson 2002). Today, the four major federal land management agencies administer more than 105 million acres (42.5 million ha) of wilderness, 33% (34.8 million acres; 14.1 million ha) of which is managed by the Forest Service (Scott 2004; Hendee and Dawson 2002).

Congress enacted the Wild and Scenic Rivers Act to: (1) address "the apparent inadequacy of state systems for preserving and protecting rivers, especially in the West"; (2) control federal water development; and (3) increase congressional control over the federal land management agencies (Fairfax et al. 1984, p. 422). The act preserves designated rivers and their "immediate environments" for their "free-flowing" characteristics, including water quality. Land management agencies administer Wild and Scenic Rivers System (WSRS) rivers and adjoining lands according to one of the system's three river classifications:

- Wild Rivers, which are "generally inaccessible except by trail, with watershed or shorelines essentially primitive and [unpolluted] waters … [which] represent vestiges of primitive America."
- Scenic Rivers, which are "still largely primitive and … undeveloped, but accessible in places by roads."
- Recreational Rivers, which are "readily accessible by road or railroad" with some development and/or evidence of impoundment or diversion (16 U.S.C. §1272 [b] [1-3]).

Similar to NWPS lands, WSRS rivers are managed by the federal land management agency that administered those lands before their WSRS designation (Coggins et al. 2002). Today, the four major federal land management agencies administer more than 10,300 miles (16,612 km) of the federally managed WSRS, 4,388 miles (7,077 km) of which are managed by the Forest Service (33% of the federally managed WSRS).

Previous Litigation Research

Researchers have examined cases based on TWA and the WSRA as part of broader examinations of environmental and/or natural resource litigation (e.g., Wenner 1982; Jones and Taylor 1995; Alden and Ellefson 1997; Baldwin 1997; Malmsheimer et al. 2004). Other researchers and commentators have analyzed selected TWA and WSRA cases (e.g., Cutler 1972; Thompson 2003; Ryan 2005). However, all of these studies have been based upon an analysis of published judicial opinions, rather than an analysis of the final outcomes of cases. As Keele et al. (2006) noted, research based on published judicial opinions creates two problems: (1) it does not locate every case based on researchers' search criteria, and (2) it often does not analyze the final outcome of cases.

Keele et al. (2006) addressed this problem by developing and using a three-step cross-checking method to locate and analyze cases and their final disposition documents. However, their article on Forest Service litigation notes only two things about wildland and river litigation based on TWA and the WSRA: (1) the number of these cases, and (2) the Forest Service's win, loss, and settlement rates in these cases. This study addresses the deficiencies in previous research and expands upon the basic TWA and WSRA findings of Keele et al. (2006).

Methods

We analyzed all cases based on TWA and WSRA legislation and in which the U.S. Forest Service was a defendant in a lawsuit challenging a land management decision from January 1, 1989, to December 31, 2004. We located cases initiated from 1989 to 2002 by using the Keele et al. (2006) database. We also used their methods to locate cases initiated in 2003 and 2004. Since Keele et al. provided a detailed explanation of their methods, we only summarize their methods for this research. This approach provides the highest probability of documenting cases. It utilized the best resources available and represents the most complete list of Forest Service land management cases based on TWA and the WSRA yet assembled.

Our TWA and WSRA constraint did not limit our analysis to cases based *solely* on these acts; it simply required that the plaintiff claimed that the Forest Service violated *at least one* of these statutes. Many cases litigating TWA or the WSRA also involve a legal claim based on at least one other statute, such as the National Environmental Policy Act (NEPA). Additionally, any litigation about Wilderness areas or Wild and Scenic Rivers that was not directly based on TWA or WSRA legislation were not included in this study (e.g., boundary disputes).

Using a three-step cross-checking methodology, cases were located with the assistance of the Forest Service's national litigation coordinator and three electronic databases. We read and coded two documents: (1) the docket sheet, and (2) one of the following: (a) for cases decided by the court, the judicial opinion(s), or (b) for settled cases, the court-approved settlement. For cases that were appealed to the court of appeals, we read and coded these documents at all court levels.

We coded final disposition of each case into three mutually exclusive categories: win, loss, or settlement. For cases whose final disposition was a judicial decision (rather than a settlement), we coded cases in which the court found that the Forest Service had done *anything* incorrectly as a Forest Service "loss," since the case at least partially altered or delayed a Forest Service land management decision. We coded cases with judicial decisions finding that the Forest Service had not done anything incorrectly as a Forest Service "win." We coded the case a "settlement" if the parties agreed to a court-ordered stipulated agreement to settle their dispute.

Results

Of the 888 Forest Service land management cases during this 16-year period, 52 (5.9%) cases contained a TWA and/or a WSRA challenge. Twenty-six (2.9%) of these were based on TWA and 29 (3.3%) were based on the WSRA; three cases included claims based on both acts. If we had only examined published judicial opinions, we would have located only 24 cases, and not 52 cases.

The Forest Service won 10 (38.5%) TWA cases, lost 11 (42.3%), and settled five (19.3%). The agency did slightly better in WSRA cases, winning 14 (48.3%), losing five (17.2%), and settling 10 (34.5%). The Forest Service was more than twice as likely to lose a TWA case and more likely to settle a WSRA case, than in all land management cases Keele et al. (2006) examined that were initiated from 1989 to 2002, where it won 58%, lost 21%, and settled 18%.

Case Location

Most natural resource agency litigation research has focused on two types of administrative jurisdictions: agency boundaries and court boundaries (e.g., Malmsheimer et al. 2004; Keele et al. 2006). Since Forest Service administrative boundaries do not correspond with court boundaries, particularly U.S. Court of Appeals boundaries (the most prevalent court boundaries used by researchers), examining spatial trends based on both types of boundaries provides a more robust analysis (see figures 1 and 2).

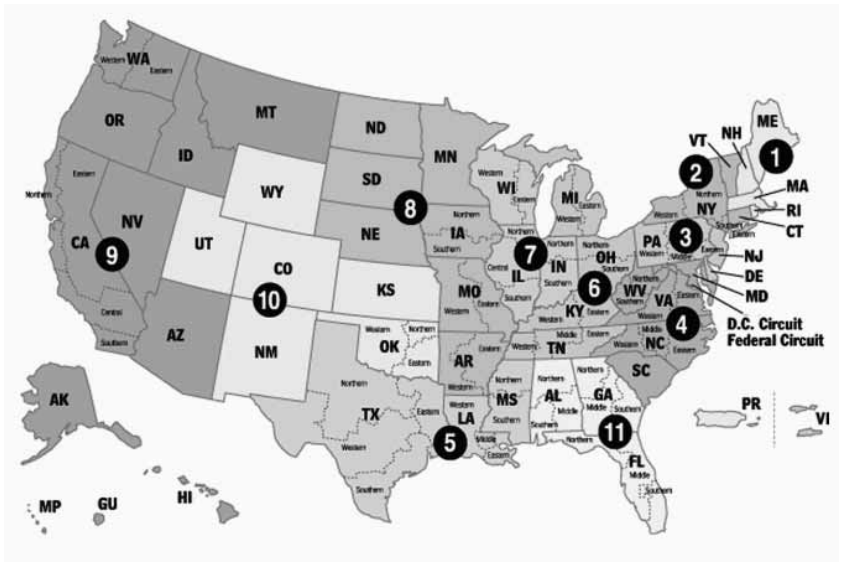

Figure 1—U.S. Court of Appeals Circuit geographic boundaries (Source: http://www.uscourts.gov/courtlinks/).

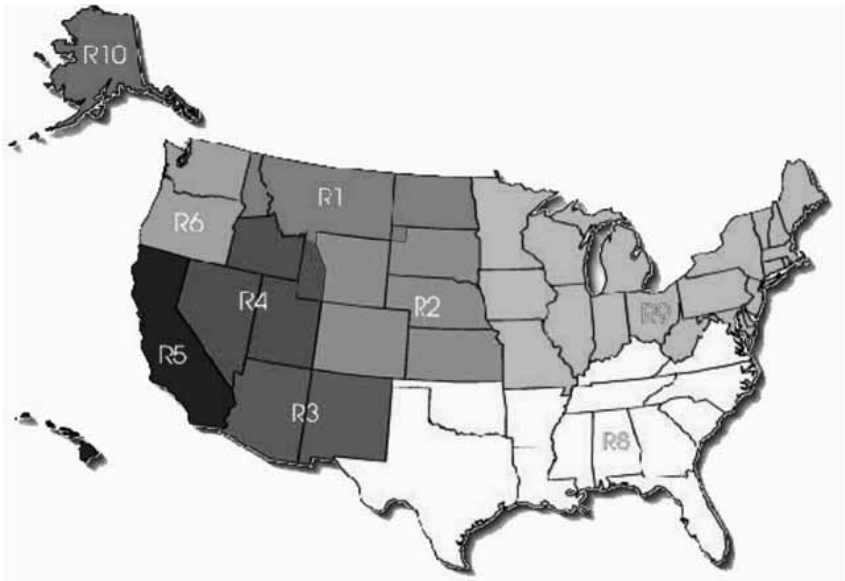

Figure 2—U.S. Forest Service region geographic boundaries (Source: www.fs.fed.us/contactus/regions.shtml).

Applying this analysis to TWA-based cases reveals that during this 16-year period plaintiffs sued the Forest Service in every Forest Service region, except Region 10 (Alaska) (see table 1). Most claims originated in the Region 8 (five cases) and Region 9 (six cases). Although these regions encompass large areas of the United States, they contain the smallest amount of Forest Service–managed NWPS acreage. The Forest Service did particularly poorly in Region 9, winning only one case and losing five cases.

Since most lands managed by the Forest Service were reserved from the public domain after the public lands east of the 100th meridian were disposed of by the General Land Office (Cubbage et al. 1993), most Forest Service–managed NWPS lands are located in the two U.S. Circuit Court of Appeals' circuits that cover the western United States: the Ninth (70.2%) and Tenth (23.8%) Circuits. Although more than a third of TWA cases were based in the Ninth Circuit; there was only a single Tenth Circuit case (see table 2). The Eighth Circuit contained six cases, more than 23% of cases despite containing less than 3% of the NWPS managed by the Forest Service. This was based in part on the prevalence of litigation involving the Boundary Waters Canoe Area Wilderness. Interestingly, the Forest Service lost four of these cases and won only two.

Plaintiffs also initiated cases based on the WSRA in all Forest Service Regions, except Region 10 (AK) (see table 1). However, cases were concentrated in four regions: Regions 3, 6, 8, and 9. Region 8 contained seven cases, more than 24% of cases despite containing 9% of the WSRS managed by the Forest Service. The Forest Service won more than half of its Region 6 (66%) and Region 8 (71%) cases, and it settled all but one Region 3 case.

More WSRA (13) cases were decided by the Ninth Circuit Court of Appeals and the district courts under its jurisdiction, than by any other circuit (see table 2). The Forest Service won six of its Ninth Circuit cases, lost two cases, and settled five cases.

Table 1. Number of TWA-based and WSRA-based Forest Service land management cases from 1989–2004 based on Forest Service Region

Forest Service Region	Millions of NWPS acres managed by Forest Service[a] (% of NWPS managed by Forest Service)	Number of TWA cases (% of TWA cases)	Hundreds of miles of WSRS managed by Forest Service[b] (% of WSRS managed by Forest Service)	Number of WSRA cases (% of WSRA cases)
Region 1: Northern	4.7 (13.3%)	3 (11.5%)	4.7 (10.7%)	1 (3.4%)
Region 2: Rocky Mountain	4.8 (13.6%)	1 (3.8%)	0.6 (1.5%)	1 (3.4%)
Region 3: Southwest	2.7 (7.6%)	2 (7.7%)	0.9 (2.1%)	5 (17.2%)
Region 4: Intermountain	6.1 (17.2%)	1 (3.8%)	2.6 (6.0%)	1 (3.4%)
Region 5: Pacific Southwest	4.5 (12.7%)	2 (7.7%)	10.9 (25.0%)	3 (10.3%)
Region 6: Pacific Northwest	4.7 (13.3%)	3 (11.5%)	11.8 (27.0%)	6 (20.7%)
Region 8: Southern	0.7 (2.0%)	5 (19.2%)	3.9 (9.0%)	7 (24.1%)
Region 9: Eastern	1.4 (4.0%)	6 (23.1%)	8.2 (18.8%)	5 (17.2%)
Region 10: Alaska	5.8 (16.4%)	0	0	0
National Cases[c]	– (11.5%)	3	0	0

[a]NWPS acreage by Forest Service Region is available at: http://www.wilderness.net/index.cfm?fuse=NWPS&sec=advSearch.
[b]WSRS miles by Forest Service Region calculated from data available at: http://www.rivers.gov/publications.html#agency-mileage.
[c]These cases were adjudicated by the District Court for the District of Columbia because they address national issues, such as challenges to Forest Service regulations, rather than location-specific controversies.

Purpose of Cases

We used the Keele et al. (2006) classification scheme to understand the purpose of the litigation, whereby they classified each case's purpose as either for "less resource use" or "greater resource use." This classification system provides simple measurement for determining litigants' purpose for suing the agency and one that can be applied more consistently, and has been subject to less criticism, than "type of litigant" schemes (e.g., environmental interest, commodity interest, etc.) used in other research (e.g., Jones and Taylor 1995; Malmsheimer et al. 2004). Consistent with the Keele et al. (2006) finding that 75% of cases are for less resource use, most wildlands and rivers cases were initiated by plaintiffs who wanted the Forest Service to limit the

use of resources. In fact, the purpose of all 29 WSRA cases was for less resource use. The percentage of TWA-based cases mirrored the Keele at el. percentages: 77% of cases were for less resource use and 23% of cases were for greater resource use. Examples of the latter included cases where the plaintiffs requested that courts set aside Forest Service decisions to (1) amend a wilderness management plan that provided fewer opportunities for commercial outfitters than the previous management plan, and (2) restrict motorboat use in an area adjacent to a wilderness area. Additional classification of the purposes of the cases is complex and beyond the scope of this article (e.g., 12 of 26 TWA cases involved some aspect of motorized vehicle use or access).

Statutory Basis

We did not limit our analysis to cases based *solely* on TWA and the WSRA. Our selection criteria only required that the plaintiff claimed that the Forest Service violated at least one of these statutes in a land management case.

Every previous study examining the statutory basis of Forest Service cases has failed to examine whether the agency violated specific statutes. For example, although Keele et al. (2006) provided information on the statutory basis of litigation, they failed to determine the specific statutes the agency violated. For example, if the Forest Service lost a case where the plaintiff claimed that the Forest Service violated TWA, the National Environmental Policy Act, and the National Forest Management Act (NFMA), Keele et al.'s (2006) analysis told us that the Forest Service violated at least one of these statutes; however, we do not know if the court decided the Forest Service violated: (1) all three statutes, (2) two of the three statutes (and which statutes specifically), or (3) one statute (and which one specifically). Our analysis presents the first statute-specific analysis.

Table 2. Number of TWA-based and WSRA-based Forest Service land management cases from 1989–2004 based on U.S. Court of Appeals Circuits

Court of Appeals Circuit	Millions of NWPS acres managed by Forest Service[a] (% of NWPS managed by Forest Service)	Number of TWA cases (% of TWA cases)	Miles of WSRS managed by Forest Service[b] (% of WSRS managed by Forest Service)	Number of WSRA cases (% of WSRA cases)
First	0.2 (0.5%)	0	0.2 (0.1%)	0
Second	0.1 (0.3%)	0	0	0
Third	0.009 (0.02%)	0	1.4 (3.1%)	0
Fourth	0.3 (0.8%)	0	0.7 (1.5%)	3 (10.3%)
Fifth	0.04 (0.1%)	0	0.4 (1.0%)	1 (3.4%)
Sixth	0.2 (0.5%)	1 (3.8%)	6.4 (14.7%)	4 (13.8%)
Seventh	0.08 (0.2%)	1 (3.8%)	0	0
Eighth	1.0 (2.9%)	6 (23.1%)	2.4 (5.5%)	2 (6.9%)
Ninth	24.8 (70.2%)	9 (34.6%)	30.2 (68.7%)	13 (44.8%)
Tenth	8.4 (23.8%)	1 (3.8%)	1.3 (3.1%)	4 (13.8%)
Eleventh	0.2 (0.7%)	3 (11.5%)	0.8 (1.8%)	2 (6.9%)
District of Columbia	–	3 (11.5%)	–	0

[a]NWPS acreage by Forest Service Region is available at: http://www.wilderness.net/index.cfm?fuse=NWPS&sec=advSearch.
[b]WSRS miles by Forest Service Region calculated from data available at: http://www.rivers.gov/publications.html#agency-mileage.

Besides TWA, plaintiffs alleged the Forest Service violated four other statutes in more than three cases (see table 3). By comparing how the Forest Service fared on each specific statute with how it fared overall in TWA-based cases (see the last row of table 1), we can determine which statutes judges were more likely to determine the Forest Service violated. The Forest Service lost on a TWA claim in eight (73%) of the 11 TWA-based cases they lost. Conversely, judges only found that they violated NEPA in two cases, and NFMA and WSRA in one case—despite the fact that the agency lost 11 TWA-based cases.

The same analysis of the six statutes involved in three or more WSRA cases reveals something different (see table 4). In WSRA-based cases, judges were more likely to find that the Forest Service violated NEPA

rather than the WSRA: judges found the Forest Service violated NEPA in four (80%) of the five cases it lost, compared to judges only finding it violated WSRA in two (40%) of the five cases it lost. Unlike TWA-based cases, where plaintiffs made NEPA and NFMA claims in more than half of the cases resulting in settlements, these two statutes were the basis of plaintiffs' claims in fewer than 40% of all WSRA-based cases that resulted in a settlement.

Table 3. Number and statutory outcome of TWA-based Forest Service land management cases from 1989–2004 based on statutory basis of litigation; table only lists statutes litigated in three or more cases.

Statute	Number of cases with a claim based on Statute	Number and percentage of cases won by Forest Service	Number and percentage of cases lost by Forest Service	Number and percentage of cases settled
The Wilderness Act	26	13 (50%)	8 (31%)	5 (19%)
National Environmental Policy Act	18	12 (66%)	2 (11%)	4 (22%)
National Forest Management Act	9	5 (56%)	1 (11%)	3 (33%)
Wild and Scenic Rivers Act	3	2 (67%)	1 (33%)	–
Clean Water Act	3	2 (67%)	–	1 (33%)
Baseline: all TWA-based litigation	26	10 (39%)	11 (42%)	5 (19%)

Table 4. Number and statutory outcome of WSRA-based Forest Service land management cases from 1989–2004 based on statutory basis of litigation; table only lists statutes litigated in three or more cases.

Statute	Number of cases with a claim based on Statute	Number and percentage of cases won by Forest Service	Number and percentage of cases lost by Forest Service	Number and percentage of cases settled
Wild and Scenic Rivers Act	29	17 (59%)	2 (7%)	10 (34%)
National Environmental Policy Act	19	11 (58%)	4 (21%)	4 (21%)
National Forest Management Act	15	11 (73%)	1 (7%)	3 (20%)
Endangered Species Act	6	2 (33%)	–	4 (67%)
Clean Water Act	5	4 (80%)	–	1 (20%)
Migratory Bird Treaty Act	4	3 (75%)	–	1 (25%)
The Wilderness Act	3	2 (67%)	1 (33%)	–
Baseline: all WSRA-based litigation	29	14 (48%)	5 (17%)	10 (35%)

Discussion

The small number of TWA-based and WSRA-based cases is not surprising given the Keele et al. (2006) findings. It is interesting to note that by extending their analysis by two years, we located eight additional TWA cases (31% of all TWA cases) and only two additional WSRA cases (7% of all WSRA cases). It is surprising that there were fewer TWA cases than WSRA cases, and this indicates the need, and opportunity, for more scholarship on the WSRA cases and legislation.

Our research would have revealed much less about WSRA cases if we had relied only upon published cases, since there were fewer than half as many published Forest Service WSRA cases (eight) as published Forest Service TWA cases (17). Since judicial rules direct judges to publish a case if it establishes a new rule of law or constitutes a significant contribution to the legal literature, the prevalence of published cases based on TWA may indicate that judges believe that TWA cases are more important or groundbreaking than WSRA (see Malm-sheimer et al. 2004). At the very least, it indicates that Forest Service land management litigation has set more precedents for future TWA cases than WSRA cases. It also substantiates the Keele et al. (2006) observation that researchers, administrators, and managers interested in truly understanding how litigation affects land management need to base their analyses and conclusions on both published and unpublished cases.

The results of our geographic comparison of TWA and WSRA cases differ from other researchers' results. The Forest Service regions encompassing the eastern United States (Regions 8 and 9) experienced more TWA litigation than any other region, and more WSRA cases than any other region except Regions 3 and 6. Both Malmsheimer et al. (2004) and Keele et al. (2006) found considerably more Forest Service cases in Region 6 than any other region. Other Forest Service research based on U.S. federal court circuits found that most litigation occurred in the Ninth Circuit (e.g., Jones and Taylor 1995; Malmsheimer et al. 2004). We found that although there were more TWA and WSRA cases in the Ninth Circuit than any other circuit, TWA and WSRA litigation regularly occurred in other circuits.

Most TWA-based and all WSRA-based Forest Service land management litigation involved lawsuits where plaintiffs were seeking to limit the use of wildlands or rivers. The TWA finding is not surprising. Keele et al. (2006) had found more than three "less resource use" cases for every one "greater resource use" case, and although direct comparisons with research that operationalized this concept by classifying litigation based on the type of litigant, such as "environmental interests" or "commodity interests," is especially troubling in recreation-based cases, the fact remains that all of these studies reveal a significant minority of cases initiated by commodity interests (e.g., Jones and Taylor 1995; Malmsheimer et al. 2004). The lack of *any* WRSA "greater resource use" cases demonstrates that although environmental interests regularly use the WSRA to challenge Forest Service land management decisions, interests concerned in increasing the use of these rivers have failed to do so.

The Forest Service is less likely to lose and more likely to settle a WSRA case than a TWA case. The prevalence of settlements in both TWA and WSRA cases demonstrates their importance as a conflict management tool in wildlands and rivers litigation—a finding that would not be possible without examining both published and unpublished cases, since settlements are never the subject of published cases. Our statutory analysis demonstrates that although we expect variance in how successful plaintiffs are under some statutes than others, it is not possible to predict that variance without an analysis based on each statute. For example, in TWA-based Forest Service litigation the agency is more likely to lose on plaintiffs' TWA violation allegations than claims based on other statutes, whereas in WSRA-based cases, the agency is less likely to lose on plaintiffs' WSRA violation allegations than on claims based on other statutes.

Parties dissatisfied with federal land management agency management decisions have increasingly used federal courts to try to reverse management outcomes.

Conclusion

This research only examines one of the agencies that administers TWA and the WSRA, and cannot be generalized to other agencies. However, the robustness of the case location and analysis methods ensure that it is the most comprehensive examination of TWA and WSRA litigation yet completed for any one agency. It provides Forest Service land managers with a comprehensive overview of 16 years of wildlands and rivers land management litigation that is not otherwise available. It provides Forest Service administrators and policymakers with new information on which they can base policy decisions.

This research examines only land management litigation based on TWA and the WSRA; it does not examine all litigation concerning wilderness areas or WSRS rivers, since litigation regarding these resources can be (and often is) based on statutes other than TWA and WSRA, and can involve nonland management issues, such as quiet title claims. However, even with this limitation, it is also important to note the relative lack of TWA-based and WSRA-based litigation. Given the millions of acres of federal wilderness and the thousands of miles of WSRS rivers, the relatively low thresholds required to initiate litigation against federal agencies, and the litigious nature of U.S. society, the most remarkable finding of this research may be that litigation based on TWA and the WSRA against the Forest Service was initiated (on average) less than twice a year during these 16 years.

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Continued from WILDERNESS IS ON THE MOVE!, page 3

traditional management in late 2007—an important step in protecting a key part of the (very wild) Guyanas Shield region.

In late 2007, Mexico's minister of environment, Juan Elvira, in a private meeting clearly informed Patricio Robles Gil and me that President Felipe Calderon is completely dedicated to his green agenda, and will personally endorse *WILD 9*, the 9th World Wilderness Congress (WWC), which will convene in Mexico in November 2009 (www.wild9.org). Mexico has the fifth highest biodiversity index of any country in the world and is an ideal place for this first WWC in Latin America. Therefore, as *WILD 9* is planned and implemented, the *IJW* will feature more wildland news from the region. This issue has an article from Mexico, showcasing the expertise of many scientists, photographers, activists, and writers, that focuses on the El Triunfo Biosphere Reserve.

Your work, commitment, and news are an important part of this international effort. Please keep in touch, and let us know your concerns and results. Thank you! IJW

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Wilderness and Accessibility

BY JANET A. ZELLER

The National Wilderness Preservation System (NWPS) ensures an opportunity for challenge, solitude, and self-renewal for each person who is willing to make the effort it will take to pursue those goals. Through the Wilderness Act we all have the right, regardless of ability, to enjoy a wilderness experience in an area untrammeled by modern motorized and mechanized civilization. The effort it takes each of us to visit a Wilderness area is an essential part of this experience. People with a wide range of significant disabilities value their right to that same opportunity to challenge themselves and, thereby, to gain the unique experience wilderness offers, either on their own or with the assistance of family or friends.

For me, the time that I spend in wilderness is my renewal, despite the fact that I now use a wheelchair. In the years before the accident, spending time in silent, self-reliant areas of wilderness was an essential part of my life. A part that I was afraid I had lost. My memory of my return to wilderness is a touchstone for me. The sun was a golden disk slipping lower on the horizon while sending a red beam across the surface of the lake toward me. The towering pines around me were becoming black silhouettes against a sky of quickly deepening pastels. The only sound was the gentle lapping of the lake against the shore. It was sunset in the Boundary Waters Canoe Area Wilderness (BWCAW), on the Superior National Forest in northern Minnesota (see figure 1).

As we paddled and portaged our canoes to get to a remote and primitive campsite, we saw otters, moose, and lots of birds, including loons with their wobbly calls as we watched them dive and then reappear in the distance. The only sounds were the dipping of paddles and quiet conversations within the awesome beauty and majestic silence of this Wilderness. That night, away from the lights of development, we saw the incredible blanket of stars spread across the sky.

Our tents were pitched in the clearing near the campfire, and up the hill was a primitive pit toilet. I had left my battery powered wheelchair at home as my manual chair is lightweight and folds nicely into a canoe. It takes the help of my friends to get me over the rough terrain, in and out of my tent and sleeping bag, up the hill to the toilet, and so forth. Whereas in my daily life I often chafe at needing assistance, on a wilderness trip it is simply part of a team effort with a mutual goal of a shared experience and therefore it is worth it to me.

Janet Zeller. Photo by N. Menschel.

It was not a "wheelchair accessible" area, but as a quadriplegic, I couldn't have been happier to be there. I was back in wilderness. The part of me I was afraid I had lost had been found. From that point on, I knew I could once again do whatever I set my mind to.

Even before a wheelchair became my means of mobility, spending time in wilderness involved planning and careful preparation. Indeed, that process and the anticipation of the coming trip have always been important aspects of the experience. Now my wilderness trip starts by identifying friends, an organization, or an outfitter that shares my love of these remote

Figure 1—Sunset in the Boundary Waters Canoe Area Wilderness. Photo by J. Zeller.

lands and is willing to provide the extra physical assistance I will need (see figure 2). Although I receive a lot of help, I still have to work to the full extent of my ability, and that effort makes reaching our destination incredibly fulfilling for me.

Figure 2—Canoeing in the Boundary Waters Canoe Area Wilderness with the help of friends. Photo by J. Zeller.

After spending time in a Wilderness area, the effort I have made, the sense of accomplishment, and the time I have spent in the unmatched peace of wilderness, refill that wilderness-shaped space within me, and my spirit is renewed. I take that refreshed spirit back to my daily life and work.

I am not alone in this revelation. In their study, McAvoy, Holman, Goldenberg, and Klenosky (2006) confirmed that people with disabilities transfer the outcomes they gain in wilderness into their daily lives.

Legal Direction on Wheelchair Use

But how can I use a wheelchair in wilderness, isn't it a mechanized device? Yes, it is. However, for some people who have mobility impairments, a "wheelchair" is their means of daily mobility; it is their footwear. As a result, Congress developed a carefully crafted limited allowance for what is essential for a person's basic physical function, while remaining sensitive to the reasons the use of mechanized devices is prohibited in Wilderness areas. This solution had to be consistent with the protection of wilderness character and the wilderness experience, which both underlie the Wilderness Act's prohibition of mechanized devices. In order to meet this need, one section in the Americans with Disabilities Act (ADA) was developed to apply to federal agency programs. That is the ADA Title V, Section 507c, which states:

> Federally Designated Wilderness
>
> IN GENERAL—Congress reaffirms that nothing in the Wilderness Act prohibits wheelchair use in a wilderness area by an individual whose disability requires its use. The Wilderness Act requires no agency to provide any form of special treatment or accommodation or to construct any facilities or modify any conditions of lands within a wilderness area to facilitate such use.
>
> (2) Definition—for the purposes of paragraph (1), the term wheelchair means a device designed solely for use by a mobility impaired person for locomotion, that is suitable for use in an indoor pedestrian area.

This is a two-part definition. In the first part, "designed solely for use by a mobility-impaired person" means that the original design and manufacture of the device was only for the purpose of mobility by a person who has a limitation on their ability to walk. The second part of the definition states that the device must also be "suitable for indoor pedestrian use," meaning the device would be allowed to be used inside a mall, courthouse, and so forth.

A mechanized device, including such a device powered by battery, that complies with both portions of this definition is considered to be a "wheelchair," and may be used anywhere foot travel is allowed in the NWPS, providing the device is used for the transportation of an individual. This definition is broad enough to allow for the inclusion of new mobility device designs as they are developed, if the device is designed solely for use by a person who has mobility impairment for their locomotion, and is suitable for use in an indoor pedestrian area. Anyone whose disability requires use of a wheelchair, as defined above, may use that device in the NWPS for their locomotion (see figure 3).

This simple definition has proven to be both flexible and effective. One of its greatest strengths is that it evaluates only the device used by a person, and does not evaluate the person. That is important because

Figure 3—Hikers in the Northeast Passage. Photo by K. Belson.

it is unlawful to ask a person about the existence of a disability, as that is confidential medical information.

Other Types of Devices Would Make It Easier

Although flexible, this definition appropriately continues to preclude the use in Wilderness of off-highway vehicles or other motorized devices that do not meet the criteria of both parts of the legal definition of a "wheelchair." That is as it should be. The law was tightly written to ensure that the minimum necessary requirement was utilized. There are devices that might make it easier for a person who has some limitations to their ability to walk long distances or over rough ground. However, the use of such mechanized devices would go beyond the minimum necessary requirement. A study by Lais et al. (1992) confirmed that the vast majority of people who have disabilities are not seeking to expand mechanized use to make access to Wilderness areas easier.

Wilderness is not about what is easy, wilderness is about "solitude or a primitive and unconfined type of recreation," as stated in the Wilderness Act, and the challenge it takes in order to experience those outcomes (see figure 4). If a person is seeking easier access, there are a wide range of other federally managed lands to choose from where motor vehicles are allowed, and yet the look and feel of the area may be the same as in the NWPS. The result of adhering to that tightly written ADA legal direction within the NWPS, and other areas not designated for motor vehicle use, is that the person who is dependent on a mobility device for locomotion is not denied the opportunity to enter those areas, and can do so without impinging on the challenge, solitude, and self-renewal that wilderness offers to each person seeking that more difficult NWPS recreational opportunity.

It's Worth It

People with disabilities go to wilderness for the same variety of reasons as do people without disabilities (Lais et al. 1992), including to challenge themselves.

Figure 4—Learning how to back down the hill for safety. Photo by G. Lais.

Kris Gulden, of Virginia, had been very active in outdoor recreation before a spinal cord injury resulted in her paraplegia (see figure 5). With the disability, simply managing daily activities using her wheelchair consumed her energy. For several years she thought about the recreation she was missing, but was apprehensive about how she could function outdoors with her disability. She learned of Wilderness Inquiry, an outfitter whose motto is bringing people together in the wilderness. All of their trips are inclusive, people with and without disabilities working together to reach a common goal. That made sense to Kris. She knew that although she couldn't carry gear, she could help with the camp cooking and in other ways. Kris says it takes more effort for a person with a disability to overcome the obstacles en route, but "I want to live life and have new experiences. With teamwork we all succeed." The assistance she needed served to bind the group together in a mutual effort to ensure they all reached their goal. It is the working together and sharing of the wilderness experience that is the highlight for Kris.

David Klingen Smith, of Colorado, has cerebral palsy, which makes walking difficult. David learned that paddling is the easiest way to access a Wilderness area. However, once he reaches the destination he still has to deal with the rough terrain on land. David says, "It's a challenge, but you can get there and once there you can see all there is to see."

Liebe Gray, of Los Angeles, has multiple sclerosis (see figure 6). She has been an avid hiker and camper for years. During the past two years, her disability has increased to the point at which she must rely on a wheelchair for her mobility. Nevertheless, she has continued her wilderness adventures. It has gotten more difficult and now requires more assistance. but Liebe says, "It's about life, whatever it takes I want to experience all of it."

Balance between Accessibility and Untrammeled NWPS

Currently there are 54 million people in the United States who have a disability. The population is also

For some people who have mobility impairments, a "wheelchair" is their means of daily mobility; it is their footwear.

Figure 5—Kris Gulden and her mom. Photo by G. Lais.

aging, and the U.S. Census Bureau tells us that by 2030 more than 80 million people in the country will be over 65. If you live long enough, you may join the minority of people who have disabilities. With increasing numbers of people who have disabilities, how do federal agencies meet the need for accessibility, while ensuring all aspects of the wilderness experience remain untrammeled? The 1973 and 1968 laws provide the guidance.

Section 504 of the Rehabilitation Act of 1973 states:

> No otherwise qualified person with a disability in the United States … shall, solely by reason of his disability, be excluded from participation in any program or activity receiving Federal financial assistance or under any program or activity conducted by any Executive agency.

Figure 6—Liebe Gray. Photo by S. Talbot.

Ensuring that no person is denied the opportunity to participate in any program or activity that is open to all other people is the cornerstone of the concept of equal opportunity. Note the law is written in the negative. A person can't be denied the opportunity to participate just because they have a disability. For example, if permits are available for the dates I want to visit the BWCAW, just because I use a wheelchair, I cannot be denied the same opportunity everyone else has to apply for one of those permits. However, I am also not entitled to any advantage in obtaining one of those permits, just because I use a wheelchair.

The Code of Federal Regulations (CFR) for the federal agencies (7 CFR 15e for the USDA Forest Service and 43 CFR part 17 for the USDOI agencies) provides the important details for how to implement Section 504 of the Rehabilitation Act of 1973. The two-agency CFRs are virtually identical, and both define a person who is qualified to participate in a program or activity as "an individual with a disability who meets the essential eligibility requirements for participation in that program or activity" (7 CFR 15e.103(4)iiiand42CFRpart12.202[k][4]). That means a person who has a disability must be able to participate under the same rules and requirements as do those participants without a disability.

Applying Section 504

For example, if due to the camper's disability, a person feels he/she could not fully participate in the BWCAW camping experience without the use of a motor on a watercraft, he/she would not meet the essential eligibility requirements for operation within the Wilderness area. The agency would instead refer the person to areas where he/she can use a motor on a watercraft. Those lake areas adjacent to the BWCAW are similar to those within the BWCAW boundaries; however, they allow for the use of motors. The different form of access is the person's choice. Were he/she allowed to use a motor in the Wilderness area, that action would fundamentally alter the wilderness experience. The law expressly prohibits any fundamental alteration to a program, solely because the participant has a disability.

If We Build It

Under the Architectural Barriers Act (ABA) of 1968, any facility that is constructed, altered, or leased by a federal agency or with federal dollars is required to be accessible. If a decision is made for environmental reasons to place a structure, such as a pit toilet riser, in the NWPS, that riser must be 17 inches (43 cm) to 19 inches (49 cm) in height to comply with the accessibility requirements. Unless there are sturdy walls surrounding that toilet riser, there is no need for grab bars. Please note that at the same time it is important not to overbuild facilities in the name of accessibility. The key is that all facilities, wherever they are located, are to be designed to be appropriate to the setting and accessible.

It's About Choice

The wide range of recreation opportunities provided by land management agencies is the essential component of

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State-designated Wilderness in the United States: A National Review

BY BLAKE M. PROPST and CHAD P. DAWSON

Introduction

In recent decades, the word *wilderness* has been used to designate, define, label, or market many public and private land areas and programs—it has various connotations and denotations. In fact, at times, it is difficult for the public to distinguish between what is implied to be wilderness and what is so designated by law. On one hand, some tourism marketing materials use the word *wilderness* to imply a state of naturalness and, thereby, sell the prospective nature-oriented tourist on a lodging accommodation or travel destination. For example, the Disney Wilderness Preserve was established in 1992 through the cooperative actions of The Walt Disney Company, Greater Orlando Aviation Authority, The Nature Conservancy, and several public agencies, but the management and allowable types of use do not support wilderness character or experiences. On the other hand, the public has grown to appreciate and use the legislatively designated National Wilderness Preservation System (NWPS) in the United States that now includes more than 107 million acres (43.3 million ha) since the passage of the Wilderness Act of 1964. The concept and use of primitive and wilderness areas goes back well before 1964 and is part of the American heritage and experience.

Protected areas labeled as wilderness exist in various types of ownership, from federal and state lands to private and tribal lands. An example of a private land area managed as wilderness is the Grandfather Mountain area in North Carolina (Johnson 1996). An outstanding example of a tribal wilderness area is the Mission Mountains Tribal Wilderness on the Flathead Indian Reservation in west-central Montana (McDonald 1995).

Blake M. Propst and Chad P. Dawson. Photo by D. Kuehn.

State-owned wilderness areas is a category of wilderness that can be confusing and, at times, misleading as to whether an area is a wilderness in name only or by objective criteria and legal designation. The state of South Carolina has the Mountain Bridge Wilderness, which is part of Jones Gap State Park and managed as a park. The state of Tennessee has the Bridgestone/Firestone Centennial Wilderness provided by a private donation and managed by the Tennessee Wildlife Resources Agency, but it does not have administrative or statutory protection as a wilderness and does not appear to be managed as a wilderness. We recognize that there are many types of protected areas that are similar to wilderness, but may be labeled by other names such as nature areas. For example, some Tennessee-state areas formerly known as "pocket wilderness" areas have been renamed as "state nature areas."

Several studies have investigated state legislation to protect state-owned lands as wilderness over the last three decades and have reported on the status of those efforts and the development of wilderness management programs

Protected areas labeled as wilderness exist in various types of ownership, from federal and state lands to private and tribal lands.

(Cutler 1971; Trumbly and Gray 1984; Stankey 1984; Peterson 1996; Dawson and Thorndike 2002). The purpose of this study was to conduct an assessment of the state-designated wilderness areas and related programs (e.g., wild areas, wildlands, etc.) in the United States and provide a summary of the wilderness or wilderness-type programs that included state-owned lands that were legislatively or administratively designated and are similar in concept to the national legislative definition of *wilderness*.

Criteria for a State Wilderness Program

Stankey (1984) conducted a national survey of state land managers to locate and identify the state wilderness programs that were established and to compare them to the wilderness definition and required conditions set up for establishing and managing federal lands under the 1964 Wilderness Act. He developed five criteria to test if a state-designated program was comparable to the federal program or not. We have adopted those five criteria and added a sixth criterion to conduct a 2007 study of state-designated wilderness areas and programs in the United States:

1. formal designation of state-owned lands by state statutory or administrative authority;
2. objectives for designation are to protect and preserve natural conditions and ecological processes *and* to provide primitive recreation opportunities (e.g., nonmotorized access, minimal development of facilities);
3. prohibition of resource development of all types, such as timber harvesting, road building, and mining;
4. size guidelines for establishment of an area and to support the protection and stewardship objectives for the area;
5. recognition of other values of the area that are consistent with management of the area as wilderness, such as historic, cultural, scenic, or scientific values; and
6. development of management plans to formally define area objectives and to guide managers in activities and decision making that fosters those objectives.

Our search for states that have state-designated wilderness started with the programs and legislation previously reported (Cutler 1971; Trumbly and Gray 1984; Stankey 1984; Peterson 1996; Dawson and Thorndike 2002) and then expanded to include an Internet search of all 50 state land management agency websites to see if any additional states had designated wilderness areas or programs since the previous studies. We contacted, by mail or telephone, representatives in each state that was identified with a Wilderness Area or Program to obtain additional information on their Wilderness Areas or Programs.

State Wilderness Programs

Compared to the nine state programs in previous research, seven state wilderness programs were still in existence and met the criteria listed above (Alaska, California, Maryland, Michigan, Missouri, New York, and Wisconsin), one did not meet the criteria listed (Minnesota), and one was removed in 1989 (Florida—due to legislative sunset). No new state-level wilderness programs were identified that met these six criteria.

Most natural area and wild area type programs did not meet the criteria for being included due to small size, lack of opportunities for solitude or primitive and unconfined recreation, and other reasons. Nonetheless, they are important protected area programs; they simply do not meet the criteria for this study.

The seven state wilderness programs that met the six criteria did so with variable success and in diverse ways, so there is no common legal or programmatic approach to report. Most of these programs were weakest on the sixth criteria requiring some evidence of management plans being developed and implemented; many have draft management plans in need of completion or older plans in need of updating.

The state of Alaska has designated some zones in state parklands as Wilderness (see figure 1) and an entire parcel of state land as a state wilderness park. In Alaska, wilderness areas were administratively designated in 1972, and one state wilderness park, Kachemak Bay State Wilderness Park, was legislatively designated in 1972. There has only been limited administrative wilderness designation since 1972. The state wilderness park definition, located in Alaska State Statute 41.21.990, contains no size criteria but emphasizes the protection of wilderness values. Wilderness areas were defined by the 1982 Alaska State Park System and Statewide Framework report to be of a size that maintains the area's wilderness

character and emphasizes values similar to the U.S. Wilderness Act. The Division of Parks and Outdoor Recreation is responsible for management. Management plans have been written for each of the state parks containing wilderness areas and the state wilderness park to give management directions and list special provisions.

The state of California legislatively established the California Wilderness Preservation System (CWPS) in 1974 by California Public Resources Code 5093.30. This statute designated the first of two state wilderness areas in California and designated Sinkyone Wilderness State Park as the only stand-alone component of the system. The other components of the CWPS are zones within other state parks called "classified internal units." Wilderness areas are defined by the enabling legislation that closely resembles the U.S. Wilderness Act definition, including the 5,000 acre (2,024 ha) size criterion and other important wilderness values. Each state agency with jurisdiction over any area designated as a wilderness area is responsible for management. General management guidelines for state wilderness areas can be found in Division 5 of the California Public Resources Code. Specific management guidelines for individual wilderness units can be found in the statutes that designate those areas or in the general management plan for the state park within which the wilderness is located.

The state of Maryland has a wildlands preservation system, which is considered Maryland's counterpart to the National Wilderness Preservation System. The Maryland Wildlands Preservation System was legislatively established by the Maryland Wildlands Act in 1971 and designations began in 1973. All state wildlands are internal units within state parks, state forests, and wildlife management areas. Wildlands are defined by Natural Resources Article §5-1201, Annotated Code of Maryland and can be classified as Type I, II, or III. Each type of state wildland has different definitions located in the same legislation and each has varying extents of management. The definition contains a specific size requirement for Type I, but not Types II or III, although it does recognize the importance of preserving areas that protect wilderness characteristics and values. The Maryland Department of Natural Resources is responsible for management. General management guidelines for state wildlands can be found in the Maryland Wildlands Act and in Annotated Code of Maryland, Department of Natural Resources Article, Title 8. Specific management guidelines for individual state wildlands are in the statutes that designate those areas and in the management plans for the state area in which the wildland is located.

Figure 1—Looking into the Chugach State Park Wilderness from Crow Pass, Alaska. Photo by Chad Dawson.

The state of Michigan includes wilderness areas in the High Conservation Value Areas program (see figure 2). The program started in 1972 when the Wilderness and Natural Areas Act 241 was passed, and designations began the same year (it was recodified in 1994 as Act 451 Part 351). Wilderness area nominations are approved by the Wilderness and Natural Areas Advisory Board or the director of the Department of Natural Resources. Wilderness areas also can be designated by a Natural Resource Commission Resolution. When areas are proposed for legal wilderness designation, it must be managed as such even during the review phase. The definition for wilderness areas in the Wilderness and Natural Areas Act

Figure 2—Young hikers in the Porcupine Mountain Wilderness of Michigan. Photo by Kim Ramm.

contains language similar to the U.S. Wilderness Act; however, only 3,000 acres (1,215 ha) are required for state wilderness designation. Each state agency with jurisdiction over state lands containing wilderness areas is responsible for management. Management guidelines can be found in the Wilderness and Natural Areas Act and in management plans for the state-managed area in which the wilderness area is located.

The state of Missouri has designated some state lands as wild areas. The Missouri Wild Areas Program was administratively established by the Missouri Department of Natural Resourcesin 1977 and designations began in 1978. All wild areas in Missouri are internal units within state parks and have an administrative level of protection. The definition of wild areas is located in the Division of State Parks (DSP) Policy N-06 and is similar to the U.S. Wilderness Act definition, except it does not include a specific size criterion and instead refers to a "sufficient size as to make practicable its preservation and use in an unimpaired condition." General management guidelines are included in the DSP Policy N-06: Wild Areas and the Wild Areas Procedures. The DSP Policy N-06 states that a management plan for each wild area will be developed, describing site-specific values and objectives. Only two wild area management plans have been completed, and a third one is on the process of being written. The Division of State Parks is responsible for operating and maintaining the program.

The state of New York has designated some state land within the Adirondack Park (see figure 3) and the Catskill Park as wilderness areas. Article XIV, § 1 of the New York State Constitution states that state forest preserve lands shall be forever kept as wild forest lands. The Adirondack Park Agency (APA) is legislatively mandated by the APA Act to preserve the natural resources of state lands, and the APA has administratively designated some lands within the Adirondack Park as wilderness. Similarly, the Department of Environmental Conservation (DEC) has administratively designated some lands within the Catskill Park as wilderness. Designations began in 1972 in the Adirondacks and 1985 for the Catskills. The same wilderness definition is used for both parks and is similar to the U.S. Wilderness Act definition, except the size criterion, which requires a minimum of 10,000 acres. The DEC is responsible for management, and general management guidelines are in the Adirondack Park State Land Master Plan and the Catskill Park State Land Master Plan. Specific management guidelines can be found in the unit management plans developed for each wilderness area.

Figure 3—Whitney Wilderness in the New York State Adirondack Park. Photo by Chad Dawson.

The state of Wisconsin administratively established one wilderness area in 1973, and then updated their state land classification policies in 2001 to create a uniform planning process for the management and use of Wisconsin Department of Natural Resources (DNR) managed properties. The classification of a Wild Resources Management Area (WRMA) is set forth in Chapter 44 of the Wisconsin Administrative Code (WAC). The definition of a WRMA contains language similar to the U.S. Wilderness Act, but does not contain a size criterion, except related to the designation of wilderness lakes (five or more acres). Management directions are located in Chapter 44 of the WAC and in the master plan for the state area within which the WRMA is located. There is currently only one WRMA in the state, the Manitowish WRMA, which was previously called the Manitowish Wilderness, and is located within a state forest. The DNR is responsible for management and is considering classifying other areas as WRMAs when current DNR land management plans are updated.

States with Wilderness Areas Not Qualifying as a Wilderness Program

Five states have designated one or two wilderness areas and make important contributions to the state

and national wilderness preservation efforts. These efforts do not meet several of the six criteria listed above to be labeled as a program in this study.

The state of Minnesota legislatively designated 18,000 acres (7,287 ha) of state land as wilderness in 2003 under legislation adopted in 1975 (now coded as Minnesota Statues 2006, Chapter 86A.05, subdivision 6). These state forest lands are an inholding within the Boundary Waters Canoe Area Wilderness (BWCAW), a federally designated wilderness area. The definition for state wilderness areas in the Minnesota-state statute contains language similar to the U.S. Wilderness Act; however, there is no size criterion. The Minnesota state statute contains management guidelines for the area; however, the state lands are using the management directions and special provisions of the BWCAW, and there is no state wilderness management plan.

The state of Hawaii has one wilderness preserve on the island of Kauai and one wilderness area on the island of Hawaii. The Alakai Wilderness Preserve was administratively designated in 1981 and the South Kona Wilderness Area was legislatively designated in 2003, with a sunset provision for December 31, 2007. Neither Title 13 of the Department of Land and Natural Resources Code establishing Alakai nor Chapter 6 of the Hawaii Revised Statutes establishing South Kona contains a wilderness definition, but they do specify management directions unique to each area. Interestingly, the state of Hawaii has a Natural Areas Reserve System established in 1970 by Chapter 195 of the Hawaii Revised Statutes that contains a definition and unique management guidelines, which are stricter than the wilderness management guidelines (e.g., overnight camping is allowed, but by bedroll only and no tents).

The state of Maine has Baxter State Park and the Allagash Wilderness Waterway that were established by state statute. Baxter State Park was established in 1962 by Title 12, Chapter 211 of the Maine Revised Statutes Annotated (MRSA) and is managed to be forever kept wild and remain in a natural wild state. Although it is intended for those persons who enjoy the wilderness, there is no wilderness definition or unique management guidelines, and it is managed by the Baxter State Park Authority. The Allagash Wilderness Waterway was established in 1966 by Title 12, Chapter 220 of the MRSA, but does not have a wilderness definition, although unique management guidelines are listed for the waterway. A restricted zone along the waterway is defined to protect and develop the maximum wilderness character of the watercourse.

State-designated wilderness areas and programs are important contributions to the total wilderness protected in the United States.

The State of Ohio has the Shawnee Wilderness Area, which is part of the Shawnee State Forest and was established by Title 15, Chapter 1503 of the Ohio Revised Code Annotated in 1988, and is the state's only wilderness area. The statute gives a wilderness definition similar to the Wilderness Act and states permitted and prohibited uses. The area is managed by the Ohio Department of Natural Resources.

The state of Oklahoma has the McCurtain County Wilderness Area that was designated by Title 29, the Oklahoma Wildlife Conservation Code, §7-701 of the Oklahoma Statutes in 1918. Access is restricted to permit only and is not used for recreational purposes. The statute does not give a wilderness definition or provide for future designations, but does list prohibited uses. It is managed by the Oklahoma Department of Wildlife Conservation.

Conclusion

Seven of the nine original state wilderness programs reported by Stankey (1984) have grown from 42 areas and 1.5 million acres (630,000 ha) to 84 areas and over 2.95 million acres (1.1 million ha) by 2007 (see table 1). Florida no longer has a wilderness program and Minnesota did not meet all the criteria set by this 2007 study as a state wilderness *program*. There are four other states (Hawaii, Maine, Ohio, and Oklahoma) with one or two wilderness areas designated and under management. Thus, there are a total of 91 wilderness areas in 12 states encompassing over 3.2 million acres (1.3 million ha) as state-designated wilderness.

Although the state wilderness areas have grown in number and total acreage, it has been a very limited expansion and not at the growth rate of the NWPS. Outside of Alaska, California, and New York, the state wilderness programs are not well known by the public and are small state land management program efforts. However, state designated wilderness areas and programs are important contributions to the total wilderness protected in the United States, especially in some states with very little federal land in the NWPS. These state wilderness programs and

areas complement the NWPS with additional areas under stewardship and management for wilderness protection for present and future generations. IJW

Table 1. States with Wilderness programs and states with one or two Wilderness areas, but no program, in 2007

State	Year Established	Number of Areas	Total Acreage
States with Wilderness Programs			
Alaska	1972	5	1,133,400
California	1974	11	475,725
Maryland	1971	30	43,733
Michigan	1972	4	57,733
Missouri	1977	11	22,993
New York	1972	22	1,214,217
Wisconsin	1973	1	5,939
Subtotal		84	2,953,740
States with Wilderness Areas, but no program			
Minnesota	1975	1	18,000
Hawaii	1981	2	30,857
Maine	1966	2	204,733
Ohio	1988	1	8,000
Oklahoma	1918	1	14,087
Subtotal		7	275,677
TOTAL		**91**	**3,229,417**

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access for all people. Each visitor has the right to choose the type of recreation experience they are seeking and then select the area they prefer, in which that activity and means of access are allowed. Information must be clearly provided concerning designated use of motor vehicles, terrain, trails, and so forth so each person can select the most appropriate setting to meet his/her needs. In addition, all facilities constructed or purchased by a federal agency or with federal dollars are to be of an accessible design and appropriate to the setting. It is important that all of us, regardless of ability, work together to protect the uniqueness and distinct means of access to the full range of outdoor recreation opportunities and experiences, including to the NWPS. IJW

How do federal agencies meet the need for accessibility, while ensuring all aspects of the wilderness experience remain untrammeled?

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Searching for Solitude in the Wilderness of Southeast Alaska

BY MARY EMERICK and DAVID N. COLE

Our group of wilderness campers perched on the rocks, enjoying the sounds of the nearby waterfall and the tide stealing in across the flats. Granite walls soared thousands of feet in the air; icebergs floated by on their way from calving glacier to the open sea. Loons called, and a rustling in the woods across the channel meant that a bear or deer might step out onto the beach at any moment. We were more than 30 miles (48 km) by boat into the Tracy Arm-Fords Terror Wilderness, and it was easy to feel that we were far removed from civilization. The possibilities for discovery were endless. This was the "southeast Alaska experience" that has been marketed to visitors and that some think will always be here due to wild weather, big seas, and an abundance of bears.

Mary Emerick. Photo by James Boyce.

Suddenly a gleaming white behemoth heaved into view, spewing amplified natural history information from loudspeakers. As the giant cruise ship powered by only a few hundred yards from camp, brightly clad visitors pointed their cameras and waved vigorously at us. A large wake barreled across the channel. Kayaks and zodiacs were launched, with chattering occupants aiming for shore. In an instant, solitude vanished (see figure 1).

Marine Highways

Perhaps we should not have been so surprised and dismayed. Here in southeast Alaska, the oceans are long-distance transportation routes. Barges hum past on the straits and floatplanes bring visitors to remote bays. Forest Service wilderness ends at the mean high tide level. That means that the long skinny fjords that dead-end at glaciers and imposing sculpted walls are not wilderness. Instead they provide marine highways for sightseeing cruise ships and private yachts, motorized fingers that extend scores of miles, deep into the heart of the wilderness. Although the use on the water is not within the wilderness boundary, the experience of visitors on shore is directly affected by that use.

In the lower 48 states, many wildernesses abut transportation corridors where one can hear and observe motorized traffic. However, in those places, trails lead deep into the wilderness, where visitors can easily get away and find quiet and solitude. In southeast Alaska, things are different. There are not many trails, so few visitors penetrate

Figure 1—Campers and cruise ships, Sawyer Island. Photo courtesy of the Juneau Ranger District.

past the first half-mile of rain-soaked, junglelike interior. Use is concentrated on the rocky shores and islands where access is relatively easy—and solitude is increasingly hard to find (see figure 2).

Solitude can generally be assured for those hikers who are brave and strong-willed enough to ascend the cliffs into the heart of the wilderness. However, even here, more and more small planes are landing on the remote lakes that dot the high country in an attempt to avoid the more congested coast. Guides are clamoring for access to places where they won't run into other people. User groups who object to seeing other parties have exchanged heated words.

The Wilderness Act defines a wilderness area, among other things, as possessing outstanding opportunities for solitude. Generally, as visitors we expect to see and hear very few people when we make the effort to enter wilderness, yet anyone who has tramped a popular trail in lower-48 wilderness areas has encountered multiple groups and endured a night of camping near other parties. The wildernesses in Alaska have stood out as touchstones for natural quiet and solitude. But are we in danger of losing this essential and unique quality? Is the natural quiet disappearing from the wilderness areas in southeast Alaska? Can anything be done to preserve it where it does exist?

Figure 2—The oceans are transportation corridors: Gut Bay, South Baranof Wilderness. Photo by Mary Emerick.

Wilderness Solitude Monitoring Project

In an attempt to find out about solitude, the Regional Wilderness Solitude Monitoring Project was launched, spearheaded by Forest Service wilderness personnel Mary Emerick, John Neary, and Kevin Hood. Along with Dr. David Cole, Forest Service research geographer with the Aldo Leopold Wilderness Research Institute, we conducted field trips in the South Baranof and Tracy Arm-Fords Terror Wildernesses in the summer of 2007. Our group struck up conversations with sightseers and hikers, paddled, hiked, boated, and flew, and ultimately developed a draft protocol for collecting information that can be used to assess trends in opportunities for wilderness solitude.

Our talks with visitors—longtime guides, locals, and repeat visitors—struck a chord with many. Everywhere we went, people agreed that there were more: more jet skis, more helicopters, more people on shore, and more boats at anchor. "You used to be the only one in this bay," was the common refrain. Others told us they avoid areas they used to visit and go to new ones where they won't meet others. Try camping near the beach at the back of long, thin bay, with five boats running generators and pointing binoculars at your camp, and you will get the idea (see figure 3). We found litter and user-created trails in previously pristine spots, indicating people are fanning out from the areas that are commonly used. These anecdotes provide clear evidence that things are changing.

Other marine wildernesses, most notably those managed by the National Park Service, such as Glacier Bay and Isle Royale National Parks, have addressed water use by regulation, including limiting large cruise ships and establishing no wake and quiet zones. But the Forest Service does not control the tidelands. So what can be done? The first step is to document what is going on. How are opportunities for solitude changing? Is there a problem? If so, how bad is it?

The task of monitoring opportunities for solitude is difficult because *solitude* is such an ambiguous term. Walk around your office and ask and you will get many different answers. Seeing just one other person is unacceptable to some visitors. Others will accept the presence of many cruise ships if it means that they can camp or hike where they want. Our protocol does not attempt to monitor solitude per se. Rather it monitors those things most likely to affect opportunities for solitude—motorized boats, aircraft, and crowds of people—things that emerged from our conversations with visitors and our years of personal experience.

After much discussion, we boiled the protocol down to a few elements that could be readily monitored. We decided to conduct monitoring in two different situations: (1) while camping at popular destinations, and (2) while traveling. Most of the events to be recorded are interactions with boats. Because the sights and sounds of a skiff have much less impact than a cruise ship whose

Figure 3—Typical campsite in Endicott Arm, Tracy Arm-Fords Terror Wilderness. Photo by David Cole.

Figure 4—A visitor experiences solitude in the South Baranof Wilderness. Photo by Mary Emerick.

loudspeakers can be heard for three miles (4.8 km), boats were classified by size as follows:

- 250+ passenger cruise ship
- 16–249 passenger ship
- 6–15 passenger ship
- 1–5 passenger ship
- Kayak, canoe, rowboat

We also recorded a class for the distance of the boat from the observer. Distance seemed important because the normal commerce of a barge chugging along three miles (4.8 km) away is less bothersome than a jet ski screaming by at close range. We were also interested in the nature of encounters with people associated with boats. If there were any verbal exchanges, this was recorded. If people camped onshore, we noted the number of people as well as whether they were within our immediate use area and whether a verbal exchange took place.

We counted aircraft if they were flying below a height of 1,000 feet (305 m) above ground level. If so, they were classified as flying, landing, or taking off. Encounters with people on aircraft were recorded the same way they were for boats. Finally, we made a subjective assessment of the magnitude of impact on solitude as follows:

- Low—not disruptive (e.g., boat passing in the distance)
- Medium—somewhat noisy or in close proximity, noticeable
- High—loud, very close, disruptive (e.g., jet ski, plane takeoff, boat generator running all night).

Preliminary Observations

After just one season of using our protocol, we have hard data to back up our initial impressions. We were heartened to find that opportunities for solitude are still readily available in many areas. Some locations had fewer than 15 minutes of disruption within a 24-hour period. However, at attractions such as Endicott Arm, with a majestic glacier at its end, the sights and sounds of people were nearly constant during daylight hours. At Fords Terror, visitors trooped on foot and paddled by kayak so close to our camp that we could hear their conversations. From a human perception perspective, we were surprised to observe that where the hum of motorboats was nearly constant, we learned to tune the noise out. In less popular bays, the occasional passage of a motorboat or the encounter of other visitors hiking was so unexpected that it tended to bother us more than if we were constantly exposed to it.

Development of the protocol has allowed us to produce a snapshot in time with which we can measure changing conditions and a framework for defining opportunities for solitude. There has been widespread acceptance for this effort among our partners and local users—a sense that "it's about time." It will not be easy to preserve opportunities for solitude that are being lost due to uses that occur outside of the wilderness boundary; perhaps it is impossible (see figure 4). Nevertheless, we believe it is our responsibility as wilderness stewards to document what is happening in this wild, remote, and unique part of the world. IJW

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Risk Factors for Coliform Bacteria in Sierra Nevada Mountain Wilderness Lakes and Streams

BY ROBERT W. DERLET, JAMES R. CARLSON, and JOHN R. RICHARDS

Abstract: In the Sierra Nevada Mountain wilderness backcountry, debate has occurred regarding the impact of cattle, pack animals, and humans on microbial contamination of the watershed. Using coliform bacteria as a marker, we hypothesized that water from high alpine watersheds with more frequent human or animal use patterns would have increased risks for presence of potentially harmful microbes. We analyzed 80 water samples from alpine wilderness areas in the Sierra Nevada Mountains of California for risk of coliform bacteria. The study found coliform bacteria at 92% of cattle sites and 56% of pack animal sites (horses and mules). In contrast, coliform bacteria were found in 18% of human day use areas, and 14% of backpacker sites. Wild sites, without human or domestic animal impact, had an 18% prevalence of coliforms. Differences in prevalence of coliform bacteria between these sites were statically significant. Heterotrophic bacteria counts were also increased in cattle and pack animal use areas. This study suggests that wilderness usage by cattle and pack animals affects water quality.

Introduction

The Sierra Nevada Mountains watershed provides 50% of California's freshwater for domestic use (Carle 2004). Much of this watershed encompasses roadless, remote backcountry wilderness areas at high elevations that putatively should have outstanding water quality. Melting snow must pass through a fragile ecosystem prior to runoff into lowland reservoirs. This ecosystem, primarily granite or metamorphic rock, has little buffering capacity, and therefore small amounts of environmental pollution may have a significant impact on biotic life. Debate has occurred regarding the impact of cattle, pack animals, and humans on contamination of the watershed, and the cattle industry has pressured the USDA Forest Service to expand cattle grazing tracts (USDA Forest Service 2006). Over the past 50 years, deposition of rate-limiting substances such as phosphates and nitrates from human activity, domesticated animals, and air pollution from the central valley of California has resulted in increasing eutrophication, with changes in phytoplankton species and biomass (Goldman 2000).

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Preliminary single year data suggests that the biomass of heterotrophic and pathogenic microorganisms are increased in areas of cattle grazing or heavy use by pack animals as a result of deposition of manure either directly or that is washed into lakes and streams (Derlet and Carlson 2004, 2006). Furthermore, the likelihood of finding pathogenic microorganisms decreases in areas where domesticated animals are not found, even when humans use these areas.

Coliform bacteria have been established as indicators of fecal pollution of watersheds (American Public Health Association 1998). The findings of coliforms indicates that the watershed carries a risk for waterborne diseases such as entero-invasive *E. coli*, *Giardia*, *Salmonella*, *Campylobacter*, and *Yersenia* species and other microbial pathogens, some that can survive for extended periods in the environment (Byappanahalli et al. 2003; Harvey et al. 1976). The objective of the current study was to confirm studies from prior years that risk-stratify areas in the watershed and compare the prevalence of coliforms. Understanding factors that impact the water quality from these areas is important for land management decisions.

Methods

A total of 80 sites from lakes and streams in wilderness areas in the Sierra Nevada of California were risk-stratified based on the primary terrestrial usage by either cattle, pack animals, human or nonimpacted "wild and natural" areas. These areas were selected, as each has different rates of fecal pollution into wilderness. Cattle excrete 99- 147 lbs/day (45–67 kg/day) of manure, a horse or mule (pack animal) 44-66 lbs/day (20–30 kg/day), and a healthy human 0.2 to 0.3 lbs/day (0.10 to 0.15 kg/day) (Ohio State University 2006; Rendtorff and Kashgarian 1967). Day hike areas, those wilderness areas where humans may visit by day but not stay overnight, could receive up to 0.3 lbs (0.15 kg) of human waste/person/day. Unvisited areas receive unknown amounts from birds and wild animals. Therefore, risk at each sampling site was defined as (1)Wild: areas rarely visited by humans or domestic animals: the prevalence of coliforms here provides a background from indigenous mammals or birds; (2) Day Hike: day use areas where humans would traverse but not camp overnight and where domesticated animals do not traverse: coliforms here would indicate that even limited human use impacts wilderness area; (3) Backpacker: areas used by humans to camp but where livestock and horses do not traverse; (4) Pack Animal: areas that have horse or mule traffic; and (5) Cattle Grazing tracks.

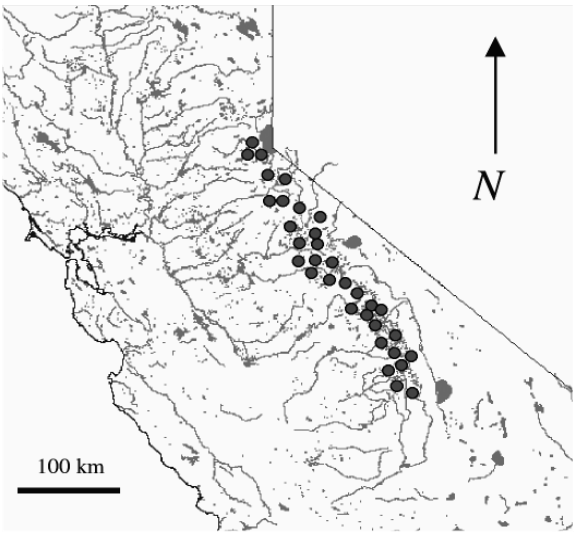

Figure 1—Study area and sample collection sites throughout the Sierra Nevada Mountain range. In some cases, a dot represents more than one sampling site because some sites were too close to individually display.

The risk designation of each site was made based on usage patterns with the assistance of the National Park and USDA National Forest Service. Collection sites were located within national parks, wilderness areas, and proposed wilderness area additions: Yosemite (n=36), Kings Canyon (n=17), Emigrant (n=14), Carson (n=6), and Hoover and proposed Hoover additions (n=7). A location map is shown in figure 1. Cattle are not allowed to graze in national parks, so all cattle risk sites were collected outside national park borders. During July, August, and September of 2005, water was collected in duplicate at each of the 80 sites in sterile test tubes and Millipore coliform samplers and transported to the university laboratories. Water was sampled from within 3.9 inches (10 cm) from the surface, where permitted, and at the deepest point from streams less than 3.9 inches (10 cm) depth. Temperature, elevation, dates and times were recorded at the time of collection. Bacteria were counted, then harvested and subjected to bacterial analysis using standardized techniques. Samples in which coliforms are found are reported as positive or negative. Results of heterotrophic counts reported as colony forming units of bacteria (CFU)/100 ml water. These techniques are described in detail elsewhere (Derlet and Carlson 2004). Total bacteria counts are presented as mean values and 95% confidence intervals. The Chi-square test was used to calculate differences between risk groups, and ANOVA for temperature and elevation.

Results

Wilderness water collection sites ranged from 4,996 to 10,997 ft (1,523 to 3,352 meters) in elevation. Water temperatures ranged from 42.8° F to 71.6° F (6°C to 22°C). Coliforms were found in 18% (2 of 11) of Wild sites, 18% (2 of 11) of Day Hike sites, and 15% (3 of 21) of Backpacker sites. In contrast, coliforms were found in 56%

(14 of 25) of Pack Animal sites and 92% (11 of 12) of Cattle Grazing tracks. Chi-square analysis revealed that the Wild, Day Hike and Backpacker versus Cattle or Pack Animal areas were significant ($p \leq 0.01$). No correlation could be made between water temperature and elevation. Table 1 compares the results from Yosemite and Kings Canyon National Parks to the USDA Forest Service Wilderness areas (see figure 2). Of the 53 national park sample sites, 30% (16/53) were positive for coliforms, compared with Forest Service wilderness areas, where 60% (16/27) were positive. Of the 16 positive Forest Service wilderness samples, 11 were from cattle sites, and 5 from stock sites.

With regard to heterotrophic bacteria, all samples grew normal aquatic bacteria including *Pseudomonas, Ralstonia, Serratia, Proteus*, and non-pathogenic strains of *Yersinia*. Mean bacterial counts and 95% confidence intervals are: Wild areas: 1,400 (500–2,300) CFU/100ml; Day Hike areas: 2,300 (1,400–3,200) CFU/100ml; Backpack sites 3,300 (2,400– 4,200) CFU/100ml, Pack Animal use areas 4,800 (3,600–6,000) CFU/100ml; and sites below Cattle Grazing areas 9,800 (7,800–11,800) CFU/100ml.

Discussion

The results of this study were similar to a smaller study performed in 2004 that examined 60 lakes or streams sites in the Sierra backcountry (Derlet and Carlson 2006). In that 2004 study, 100% of water collected below Cattle Grazing watersheds grew coliforms and 80% of Pack Animal sites had coliforms found. In addition, 7% of Backpacker sites and 7% of Wild sites yielded coliforms, similar to the current study. Day Hiker sites were not included in that analysis, but based on the current study, have the same risk profile as Wild and Backpacker sites. It is not possible to find sites exclusively used by pack animals, as these sites were also used by backpackers (see figure 3), therefore some of the coliforms found at these sites could have originated from human waste. Against this possibility, Backpack sites had no more coliforms than Wild sites. The Wild sites essentially served as control sites that measured background coliform levels.

Figure 2—Bench Lake, Kings Canyon National Park. Photo by R. Derlet.

There are few other studies that have attempted to analyze the risk for finding pathogenic microorganisms in the high Sierra by risk stratifying each sample site (Silverman and Erman 1979; Suk et al. 1987). In the 1970s, Silverman et al. performed an analysis of several lakes in Kings Canyon National Park (Silverman et al. 1979). They found that water from lakes and streams with higher human activity tended to have a higher prevalence of coliforms. However, the study did not differentiate between backpacker only versus backpacker and pack animal traffic. A retrospective review of the data shows that backpacker-only areas had little coliform contamination. For example, Dragon Lake in Kings Canyon is located up a steep granite embankment off-trail and, although has human presence, it rarely sees visits by pack animals. This lake had no coliform contamination in the Silverman study.

The finding that Backpacker sites had a low level of coliforms similar to that found at Wild or Day Hike sites is consistent with a prior study (Derlet and Carlson 2006). One might expect coliform levels to be high, as areas sampled have use by hundreds of backpackers in season. However, unlike for cattle and pack

Table 1. Comparison of National Park and Forest Service areas by risk[a]

Number of Sites with Coliforms/Total Sites by Category						
	Wild	Day Hike	Backpack	Pack Animal	Cattle	Total Sites
Kings Canyon NP	0/0	0/2	1/6	3/9	N/A	4/17
Yosemite NP	2/10	2/7	2/10	6/9	N/A	12/36
N.F. Wilderness	0/1	0/2	0/5	5/7	11/12	16/27
Totals	**2/11**	**2/11**	**3/21**	**14/25**	**11/12**	**32/80**
Percentages	**18%**	**18%**	**14%**	**56%**	**92%**	**40%**

[a]Each risk category and area data show the number of sites positive for coliforms divided by total sites in the risk area. For example, in Kings Canyon NP, 3 of 9 pack animal sites tested positive for coliforms.

animals, human waste is buried in the soil and undergoes decomposition, unlike surface deposition by domesticated animals. We believe this may be an important reason for the finding.

The current study is important for several reasons. First of all, it confirms the results found in a limited study, conducted in the summer of 2004. It also shows that within high alpine wilderness areas, the quality of water differs depending on the usage pattern. In addition, it provides further evidence that cattle grazing tracks result in significant contamination of the watershed with coliforms and potential risk of pathogenic organisms. Although coliform contamination below cow pastures has been described in the literature (Ramos et al. 2006), actual documentation in the Sierra Nevada wilderness is limited, and this study provides important data for federal land management agencies. Furthermore, the finding of coliforms below areas where pack animals have traversed waterways (see figure 4) suggests that management decisions on wilderness stock should be reviewed to ensure a more pristine watershed and, thus, ensuring acceptable water quality for California's largest water source. In addition to microorganisms, cattle and pack animals excrete large amounts of phosphorus and nitrates, which stimulate algae growth and have detrimental effects on the environment (Belsky et al. 1999).

High Sierra wilderness areas used by cattle or livestock are at a higher risk for coliform pollution of lakes and streams than areas used exclusively for day use or backpacking by humans. Humans utilizing water in wilderness areas for drinking and cooking purposes should be aware of the possible presence of pathogenic bacteria. IJW

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Figure 3—Upper Bubbs Creek watershed, Kings Canyon National Park. Photo by R. Derlet.

Figure 4—Pack train, John Muir Wilderness. Photo by R. Derlet.

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Wilderness Restoration

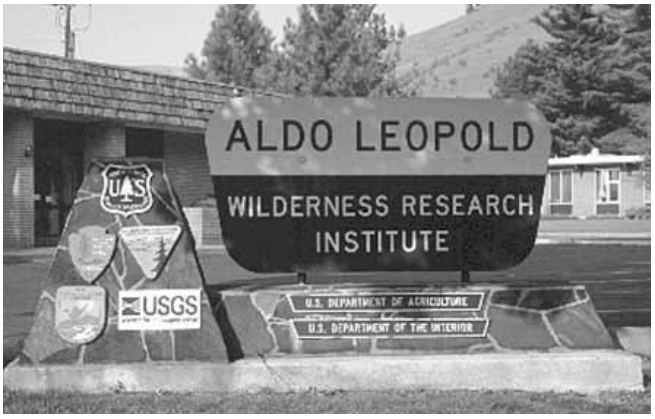
From Philosophical Questions about Naturalness to Tests of Practical Techniques

BY DAVID N. COLE

When crafting the U.S. Wilderness Act, Howard Zahniser selected the word *untrammeled* rather than *undisturbed* to describe wilderness (Harvey 2005). This reflected his belief that places that had been disturbed by humans should be considered for wilderness designation because impaired ecosystems could be restored. Like many others, he hoped that restoration could be accomplished simply by leaving the wilderness alone. This was reflected in his famous declaration that wilderness stewards should be guardians rather than gardeners. In recent decades, it has become increasingly clear that human impact from fire suppression to invasive species and air pollution has affected every acre of wilderness. Wilderness stewards must choose to be gardeners or watch as native biodiversity is assaulted by these agents (Cole 2000).

Although controversial, active management of wilderness to restore ecosystems has been undertaken. Fires have been ignited; lime has been dropped in streams; bioagents have been released. Considerable attention has been given to defining the historic range of variation in ecosystem conditions—to define reference or benchmark conditions—the objectives that define restoration success. The idea is to restore conditions such that conditions in the future are within the bounds set by past wilderness ecosystems (Landres et al. 1999).

Global climate change, however, is making this approach questionable. There is a strong consensus that future climates will be "novel," unlike those of the past, leading to no-analog communities (communities unlike any found today) and ecological surprises (Williams and Jackson 2007). If we restore past conditions, those communities are likely to be dysfunctional—no longer appropriate for future climates. If we choose to intervene in wilderness ecosystems we need to draw on something other than the concept of naturalness and the notions of reference and benchmark to set targets and objectives. We need to recognize that we will be redirecting ecosystems more than restoring them. Past conditions, even when employing a range of variability, are no longer a proxy for well-adapted wilderness conditions.



Recognizing this, the Aldo Leopold Wilderness Research Institute co-organized and cohosted a small "Beyond Naturalness" workshop to consider these issues and concerns. There was general agreement by workshop participants that many of the traditional meanings of naturalness no longer provide useful guidance for wilderness stewardship. Beyond that, there was considerable

Continued on page 42

The El Triunfo RAVE: Rapid Assessment Visual Expedition

BY JAIME ROJO

In April 2007, a group of five well-known conservation photographers and a crew of camera people, writers, and technical assistants undertook a photographic expedition to the cloud forests of El Triunfo Biosphere Reserve, in the Sierra Madre of Chiapas, Mexico. The objective was to raise the awareness of society on this endangered ecosystem and to support with their images and commitment the activities of the El Triunfo Conservation Fund, a local NGO that works to preserve the last remnants of these forests in Mexico.

It began as a casual trip to photograph the nesting season of the quetzal, a highly valued, well-known bird in the El Triunfo forests. Mexican conservationist and photographer Patricio Robles Gil and his colleagues and friends Jack Dykinga—Pulitzer prize winner and one of the world's masters in large format landscape photography—and Tom Mangelsen—one of the most respected and acknowledged nature photographers—had been longing to do a trip together in Mexico with a conservation approach. El Triunfo cloud forests are a silent wilderness crowned with staggering trees of more than 200 feet (61 m) and home of the last populations of the quetzal in Mexico. These forests had captivated Patricio in the past, so he proposed to his colleagues that they take a trip to the area. The El Triunfo trip rapidly began to grow into something of greater importance, as often happens when you combine passion with commitment.

Two factors were at work. Patricio was inspired by the Rapid Assessment Program concept of Conservation International, in which a group of very specialized scientists travel to a region to develop a thorough baseline inventory of biodiversity. At the same time, he was frustrated by the scarcity of nature photographs in Mexico. Patricio is founder of Agrupación Sierra Madre and Unidos para la Conservacion, two Mexican conservation NGOs working to create awareness and preserve the last wild places of Mexico. During many years, Patricio had tried with some success to create a team of photographers that would work in an area to obtain enough images to achieve a successful communication campaign, and this background led to what was to be a totally different concept of a conservation photography expedition.

Jaime Rojo © Fulvio Eccardi

Patricio invited Fulvio Eccardi and Florian Schulz to join the expedition. Fulvio is an Italian born photographer and current vice president of El Triunfo Conservation Fund, whose images of the quetzals and the cloud forests in El Triunfo had helped to designate it as a Biosphere Reserve. Florian is a young and committed German photographer with interest in working on a conservation project in Mexico. As the project grew bigger, writers, technical assistants, a doctor, and two camera people joined the group.

Patricio discussed the expedition idea with Cristina Mittermeier, who is director of the International League of Conservation Photographers (ILCP), a federation of top conservation photographers who have demonstrated the highest skills in photography, outstanding ethical standards, and a sustained commitment to conservation. Cristina was excited about the idea and endorsed the project as a formal expedition of the ILCP. Together, they named the expedition concept a Rapid Assessment Visual Expedition and that gave it a compelling acronym: RAVE.

RAVE is a new concept in conservation marketing, an innovative communication tool created to respond to the pressing needs of modern conservationists in their quest to protect Earth's last natural values and wild places. The goal

This cloud cascade symbolizes the key role of El Triunfo cloud forests in water absorption and climate regulation in a region in which many villages in the lower valleys depend on the survival of this forests for their water supply. © Fulvio Eccardi

is to develop a fast and attractive communication campaign to raise the awareness of society about a specific region under serious threat. RAVE aims to achieve a full visual and media assessment of an area in a short period of time by means of a multidisciplinary team that includes specialized photographers (landscape, wildlife, macro), writers, and camera people.

El Triunfo Biosphere Reserve in the southern Sierra Madre of Chiapas was the perfect environment to host the first RAVE. Almost 255,000 acres (103,240 ha) in extent, El Triunfo is one of the biggest and better preserved extensions of cloud forest in Mesoamerica, an ecosystem highly threatened at a global scale, as its original extension has been reduced by 60% in the last decades. The breathtaking mountains of El Triunfo are reported to have one of the largest diversities of tree species in North and Central American forests and to be one of the largest areas of forests remaining in Mexico. This humid, cold, and quiet ecosystem is the domain of organisms whose origins date back to a remote geological past. El Triunfo is one of the last biological refuges in Mexico and provides shelter to numerous endemic species that had evolved separately from other members of their families. Centennial oaks and liquidambars covered in bromeliads and mosses are surrounded by scattered patches of ancient tree ferns, which give these mountains a prehistoric mood. It is home to a large biodiversity that includes 24% of the animal species registered in Mexico. El Triunfo is a key region for migratory birds, a priority international conservation site, and the domain of the elusive horned guan—an endemic, turkeylike bird of the highlands of Mesoamerican hotspot, and

The hard, sinuous and humid hike to the camp took 6 1/2 hours with 16 mules carrying 55 bags of equipment and supplies. © Patricio Robles Gil

the only surviving species of a very ancient lineage that dates back to possibly as much as 40 million years. It is also home for one of the last remaining populations of resplendent quetzals—sacred bird of the Mayas and described by ornithologist and artist Roger Tory Peterson as the most beautiful bird on the Americas.

In addition to the biological diversity that makes El Triunfo a special place, these cloud forests provide important ecosystem services. As one of Mexico's rainiest regions—with more than 250 days of rain every year—El Triunfo is the origin of many of the streams that irrigate the coast and heartland of the state of Chiapas and adjacent states such as Tabasco. The thick vegetative cover prevents water runoff, soil erosion, and landslides. The rainfall in El Triunfo sustains arable farming and cattle breeding that are downstream and contributes to the generation of hydroelectric power in the country. The Grijalva River basin, fed by rainwater draining off the reserve's hillsides, powers four hydroelectric facilities that generate 40% of the country's hydroelectric power, or 1.4% of the total electricity produced in Mexico.

El Triunfo plays a major role in the socioeconomic development of the region. It is one of the few places where traditional organic shade-grown coffee plantations have been sustained, thanks to conservation programs encouraged by the Mexican government and alliances between corporations and NGOs, as is the case with Conservation International and Starbucks. Such programs encourage local owners to maintain traditional and more sustainable shade-grown coffee plantations that need shade produced by the forest canopy to grow. The programs provide an opportunity for economic development, while preserving the habitat for many migratory birds of the Americas.

The Godman's Montane Pitviper (*Cerrophidion godmani*) belongs to a group of snakes in Central America which inhabit the cold and humid forests of the mountain areas. © Florian Schulz

However, these magnificent cloud forests face severe environmental threats such as fires, hurricanes, tropical storms, illegal logging, land use changes for agriculture and cattle, and plans to develop a new road that would traverse the region and fragment this valuable, wilderness ecosystem. Unfortunately, many people, including high-ranking government executives in Mexico, do not recognize the relationship that a healthy ecosystem has with minimizing or preventing some natural disasters. For example, when Hurricane Stan hit the region in 2005, floods ravaged the mountainsides that were unable to retain water due to illegal deforestation, and then soil sediments filled hydroelectrical dam impoundments and washed away numerous roads and railways. Even after this disaster, unregulated land development and illegal logging

RAVE aims to achieve a full visual and media assessment of an area in a short period of time by means of a multidisciplinary team.

The Horned guan (*Oreophasis derbianus*) is among the most extravagant bird species of this Mesoamerican hotspot. This turkey-like endemic bird is considered the descendent of an ancient lineage of cracids that goes back to 40 million years ago. © Patricio Robles Gil

El Triunfo is considered amongst the most diverse forest of all North and Central America. It has almost 2,300 plant species including some of the tallest trees in Mexico such as elms, oaks and liquidambars, and some isolated cedar patches in areas of the Pacific slope. © Jaime Rojo

is still common practice in the region.

The need for a conservation campaign in El Triunfo was even more compelling under the light of these threats, so the RAVE team started to work. The international recognition of El Triunfo and critical threats to it attracted the participation of important conservation institutions. A fund-raising campaign was initiated, and soon the partners and supporters for the expedition were consolidated. Funding, both financial and in-kind, was obtained through different sources. Direct financial support came from organizations such as the National Geographic Society, Conservation International, Unidos para la Conservacion, and Reforestamos Mexico. Reforestamos is a newcomer on the Mexican conservation agenda and the environmental philanthropic branch of Grupo Bimbo—one of the biggest bakery corporations in the world. It works to preserve and recover forested areas in Mexico and promote a forestry-related rural culture. The federal and local governments in Mexico supported the expedition hosting and providing transportation for the participants, helped to coordinate the necessary permits to work and camp in the protected area, and set up some blinds to photograph the elusive quetzal in its nest.

From left to right: Florian Schulz, Jack Dykinga, Patricio Robles Gil, Tom Mangelsen and Fulvio Eccardi, the first RAVE team. © Patricio Robles Gil

The final group of 13 people, including the five photographers, two camera people, three writers, two technical assistants, and a doctor, met in Tuxtla Gutierrez on the morning of April 1, 2007. the trip started with a three-hour drive to Jaltenango—the last major village in the area—plus four hours in a cattle truck until, we reached Finca Prusia, where a group of 16 mules was waiting to help us carry the 55 bags of equipment and supplies. It took six hours to climb the steep and strenuous trail to El Triunfo campground. Once there, the working dynamic of the expedition was almost flawless. The photographers would depart early in the morning and spend all day working. Patricio assumed leadership and coordinated the different objectives necessary to obtain a full visual assessment of the area. The team even met with the coffee workers of the nearby ejidos (communal lands), to document the struggle of a community that loves the forest and sacrifices a better quality of life to sustain the resource for future generations. After two weeks of work the expedition headed back to Tuxtla Gutierrez, where a press conference was held at the Natural History Museum.

A major turning point in a career of a nature photographer is centered around personal commitment. Although it is always nice to photograph wild nature, it is through the subsequent campaign actions that conservation photographers are born. This was why the ILCP endorsed this expedition, because all of the photographers involved had already demonstrated their commitment to conservation in addition to their art. The results of the trip include roughly 30,000 photos and 30 hours of video that are being used to develop a strategic international campaign to raise the awareness about the conservation needs of El Triunfo. Several articles have been published in magazines in Mexico, the United States, and Spain, and several more are being scheduled. A large format calendar has been produced, and it is already being

sold around the United States and in Mexico. A short TV documentary was edited and launched at the Jackson Hole Film Festival. The first fund-raising event, organized in Tuxtla Gutierrez by Fulvio Eccardi in late October 2007, raised nearly US$500,000 for El Triunfo. All these conservation efforts are being channeled through the El Triunfo Conservation Fund (www.fondoeltriunfo.org), a local nonprofit institution. This fund was established in 2002 and partially financed by the Packard Foundation to provide the reserve with the financial resources necessary for projects and basic operational expenses and, ultimately, to ensure the long-term conservation of the area.

Among all of these results, one has acquired a larger meaning. The first RAVE was a success for the photographers and for the conservation of El Triunfo. The RAVE is a new tool for conserving wild nature, a model that can be replicated elsewhere on the planet … and already is being used. The second RAVE took place in mid-September in Balandra Bay, Baja California, and helped to prevent the land development of a wilderness along the Gulf of California. More RAVEs are already being planned by Patricio and the ILCP (www.ilcp. com/Projects/RAVE.htm). A new revolution has started in the field of nature photography—a new conservation opportunity. IJW

JAIME ROJO honed his photography skills in Mexico with Patricio Robles Gil, the acclaimed Mexican conservation photographer. Jaime was director of conservation programs for Agrupacíon Sierra Madre, a conservation organization founded by Patricio, and is now the executive director for WILD 9–the 9th World Wilderness Congress–that will convene in Mexico in 2009.

Beneath Waves of Fog … When the Mountain Speaks

From the diary of María José Cruz-Guerrero de la Concha, a writer on the first RAVE

I started my way up the dense mountain guarded by young and old trees well protected by a thick mushy layer of recently fallen leaves. The growing blend of the silence in human voice and the subtle sound of our boots touching fertile soil was beginning to reach my soul; as the climbing got steeper and my nonathletic heart pounded faster, more intense was my immersion into that new dimension where the eccentricities of urban life had no sense at all. I knew it would take us at least five to seven hours to get to the camp: also, I was full aware of my scarce physical condition. Nevertheless the excitement within me surpassed any weariness. It was a privilege to immerse myself into this mystical cloud forest, hopeful of witnessing the quetzal's flight or the jaguar's roar…

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The El Triunfo RAVE symbolizes a diverse picture, including not only flora and fauna but also a human sense. These photographers gave a special touch to this trip, all of them being unusual people who have allowed themselves to be carried away by life's peculiarities, making every experience they have an incredible narrative of absolute yet unusual facts.

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Nature photography is an art and a science, blending different rites: identifying each detail and finding the extraordinary in the obvious; spending days hidden, motionless inside a blind or strolling in silence through the forest and pausing to blend with the background for a while in those spots that seem promising.

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On a personal level, El Triunfo RAVE is a call to abandon any professional option that does not contribute to the reconstruction of the Earth. Memories of the cloud forest wild will also stay with me: fleas, ticks, and way too many mosquitoes. I am very fortunate: many conversations we had during the trip became a turning point in my life; deep experiences that usually come once a year were an everyday activity on this trip; my soul was healed and mental boundaries were erased; I was able to fully sense, a talent so basic but so easy to oversee living in a metropolis such as Mexico City.

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Now I question myself: "What would happen if these spaces did not exist? How would we find ourselves?" Surely, our spirit would slowly die, in absolute loneliness and covered in deep longing, searching constantly to return to the wilderness that once existed in abundance.

PAN Parks Perspectives for a Wilder Europe

BY VLADO VANCURA, ZOLTÁN KUN, and MYLÈNE VAN DER DONK

Europe is without a doubt the continent where nature has been most affected by human influence. Indeed the rich biodiversity found in some parts of the "old" continent are very interconnected with, and dependent upon, human management. The European landscape has been shaped through thousands of years of human activity and it is part of our cultural, social and economic heritage.

Due to this close relationship between nature and human development, it is sometimes forgotten that there are remains—even if only in small fragments covering altogether no more than about 1% of all territory—of small, yet important, areas of what can be called "virgin," "natural," "wild," or "wilderness" areas. These are areas where we can still find natural systems where man has had only minimum influence.

PAN Parks voluntarily shares practical lessons learnt on how to approach a wilderness area management, how to allow for an area of sustainable use, and how to enable local communities to derive benefit from the wilderness area. (Miko 2007)

Vlado Vancura

A growing number of people are now starting to value Europe's natural heritage as much as its cultural heritage. Wilderness has been missing from the image of Europe—until recently. The vision of wilderness is a concept that reaches deep into the heart and emotions of most people. It is well known throughout the globe, but most Europeans do not realize, that they can still find exceptional remnants of wilderness on their own continent. These places are the PAN Parks.

Addressing a Need

During the second half of the 1990s, the Word Conservation Union (IUCN) expanded their categories for protected area management. This, in turn, increased the number of protected areas listed; however, it did very little to increase the management effectiveness of these areas. There was growing evidence suggesting that the value of many of the world's protected areas were under threat and that a significant number of these areas were degrading and suffering significant biodiversity loss. Recognizing this as a major problem, the World Commission on Protected Areas stepped in and developed Management Effectiveness Guidelines. They highlighted strategies to help protected areas that had insufficient funding, internal management issues, and social/community problems. Witnessing all of this, the World Wide Fund for Nature (WWF) decided to make protected area management effectiveness a key priority in their already well-established Forest Programme.

Developing the Concept

To address this priority, WWF devised Protected Area Network Parks (PAN), and since its early beginnings, the wilderness concept became integral to this project. WWF's

first priority was to align themselves with a partner that shared their vision for improved management of Europe's protected areas. Following the IUCN's category expansion and a redefinition, most protected areas had to incorporate education and recreation into their regular activities. This made partnering with a tourism company an obvious choice.

The WWF found the perfect partner in the privately owned Dutch tourism company, Molecaten. In August 1999, two years after the initial launch of the project, the PAN Parks Foundation was legally registered.

The backbone of the foundation is its transparent certification process. If a protected area wants to become a certified PAN Park, it must meet each of PAN Park's strict principles and criteria. This process is aimed at defining the quality standard that both protected areas and local business partners must maintain in order to become and remain certified. The verification process is a transparent third-party audit, and if a candidate is successful, the process provides stakeholders (i.e., donors and visitors) with a guarantee that the protected areas management objectives and activities are compatible with biodiversity protection and sustainable tourism.

PAN Parks Principles

Principle 1: Rich Natural Heritage. PAN Parks are large protected areas, representative of Europe's natural heritage, and protect international important wildlife and ecosystems.

Principle 2: Nature Management. Design and management of the PAN Park aims to maintain and, if necessary, restore, the area's natural ecological processes and biodiversity.

Principle 3: Visitor Management. Visitor management safeguards the natural values of the PAN Park and aims to provide visitors with a high-quality experience based on the appreciation of nature (see figure 1).

Principle 4: Sustainable Tourism Development Strategy. The Protected Area Authority and its relevant partners in the PAN Parks region aim at achieving a synergy between conservation of natural values and sustainable tourism by developing and jointly implementing a Sustainable Tourism Development Strategy.

Principle 5: Partnerships. PAN Parks' tourism business partners are legal enterprises that are committed to the goals of certified PAN Parks and the PAN Parks Foundation, and actively cooperate with the local PAN Parks group to implement the PAN Park region's Sustainable Tourism Development Strategy effectively.

Figure 1—A ranger on patrol in the Borjomi Kharagauli National Park, Georgia. Photo courtesy Vlado Vancura of PAN Parks.

Wilderness—A Key Element of PAN Parks Concept

The goal identified at the beginning was very clear: to create a network of the best-managed wilderness protected areas in Europe. Wilderness protection became a driving force behind PAN Parks despite the fact that, for political and historical reasons, the concept of wilderness has been a bone of contention in Europe.

The assumption at the beginning was that most Europeans do not know that they can still find remnants of wilderness on their continent. An important element of the concept was to make it possible for people to see primeval forests or visit mountains where wolf, lynx, or brown bear still roam freely (see figure 2). The idea was to create certified PAN Parks in Europe so people would not need to travel to distant places. Today 10 such certified parks are dispersed throughout Europe from the Arctic Circle to the Mediterranean and are providing very different opportunities for recreation and tourism.

A decade ago the first steps were taken to realize a marriage between conservation and the tourism industry in the most important wilderness areas of Europe. This initiative, implemented

Figure 2—Wilderness means space for wildlife such as native bears and chamois. Photos courtesy of Leif Ostergren and the Majella National Park.

Figure 3—Local partners and a traditional welcome. Photo courtesy of Gavin Bell of PAN Parks.

by the PAN Parks Foundation (PPF), awards protected areas that meet the quality standards of conservation management, the PAN Parks quality seal. In this project, tourism is seen as an opportunity rather than as a threat, and it is a means to give economic value to wilderness-protected areas and to create support for conservation.

The key conservation concern of PAN Parks is to contribute to the goals of the Convention on Biological Diversity through:

- developing a verification scheme that evaluates and improves the effectiveness of protected area management;
- providing a method to measure the costs and benefits of protected areas from a social and economic point of view; and
- providing communication tools to improve the capacity and skills of protected area managers.

A Term of Contention

The term *wilderness* generally evokes defensive feelings in the European mind. The idea to leave some land untouched is often labeled as anti-human and unfeasible in the densely populated continent. There are some European countries where the term is misinterpreted, or poorly understood, whereas in other countries, *wilderness* has no equivalent in the national language. Wilderness is often understood to be a thrilling holiday experience for which it is worth traveling to far lands, but that wilderness experience cannot be explored in Europe.

On the other hand, *sustainable development* is a more recent and widespread term that suggests an acceptable activity, and the term has been adopted quickly by the public. One way to promote wilderness in Europe is to build on this acceptance by arguing that in some areas wilderness protection is the best way to provide "sustainable use." Over the last few years in Europe we have observed a gradual shift in the attitudes of government and the public to wilderness. There are more European countries that take an interest in wilderness protection through their national parks and their core zones. PAN Parks is providing the framework for developing a network of European wilderness areas.

Europe and Worldwide Wilderness

Numerous worldwide wilderness assessments between 1987 and 2002 demonstrated that 25 to 50% of the Earth's land surface remains wild. For example, the assessment done by Mittermeier and others (2002) found that 46% of the planet is still wild. With a very small amount of remaining wilderness, Europeans do not aspire to create vast wilderness areas such as are in Kamchatka, Africa, or Alaska.

The wilderness challenge in Europe is to adapt the concept of wilderness to a multicultural protection framework. The campaign needs to reinforce that wilderness is important to all Europeans, because wilderness is part of our forgotten "common European heritage" and part of contemporary European identity (see figure 3).

The misperception, even presented by conservationists, is that Europe has no potential for wilderness protection. Protecting wilderness is much more a matter of societal and political will power, rather than the size of a wild area. Many Europeans still believe that we have a right and duty to modify, influence, and (mis)-use nature in the same manner as was done in the past. PAN Parks believes that Europeans need the opportunity to enjoy and experience the last remnants of European wilderness.

What Is Wilderness?

Wilderness in the PAN Parks is a large area of land with its native plant and animal communities and the ecosystems intact and in an essentially natural state. PAN Parks wilderness areas are those lands that have been least modified by humans and represent the most intact and undisturbed expanse of Europe's remaining natural landscapes.

Practically, a PAN Parks core/wilderness zone is at least 10,000 ha (24,700 acres) in size, an area where no extractive uses are permitted, and where the only management interventions are those aimed at maintaining or restoring natural ecological processes. PAN Parks wilderness areas are places where wildlife thrives, natural processes are allowed to function without human interference, and people are occasional and respectful visitors. The goal of PAN Parks is to protect the last islands of wild nature in Europe. Many of these parks are located in the

backyard of European cities with automobile access nearby, and can accommodate people of all ages and fitness levels. Adventurous visitors can take short- or long-distance hikes and try canoeing or camping.

The wilderness concept distinguishes the PPF from other conservation activities in Europe. It is used to market the destinations and to help create opportunities for experiences linked to it, such as "The Polish Wild East" or "Bear Tracking in the Wilderness." Although the wilderness concept and effective management unify all PAN Parks, the range of opportunities offered in PAN Parks includes nature-based tourism with a lot to offer all ages and all interests (see figure 4), such as dog sledding or rafting at the Arctic Circle, ice climbing in Fulufjället's waterfall, survival activities among the peaks of Retezat Mountain, or bear tracking in the Polish forests.

Biodiversity and PAN Parks Wilderness

Ironically, some of Europe's biodiversity is dependent on human activities and past or current impacts on ecosystems. Some protected areas are intensively managed (e.g., animal grazing, cutting vegetation), but some protected areas are not intensively managed. PAN Parks works with this second group of protected areas where ecosystems are based on both structure and function, instead of overemphasizing structure and local biodiversity at the expense of function. PAN Parks looks to the opportunities presented by natural succession and ecosystem dynamics to protect global biodiversity.

Protection through Awareness

A core aim of PAN Parks is to raise awareness about European wilderness areas and generate support for them through stimulating sustainable nature-based tourism (see figure 5). PAN Parks works with local businesses in rural areas, and by doing so creates support for conservation, community involvement, and commitment to sustainable tourism development of the region. The PPF works to promote the certified parks (see table 1) as destinations to the European travel market.

The Future of PAN Parks

A related goal of PPF is to apply the wilderness concept in marine protected areas, such as the Archipelago National Park in Finland that joined the PAN in late 2007. The successful PAN Parks certification process in Peneda Geres National Park in Portugal will demonstrate that wilderness is playing an important conservation role in the Mediterranean region.

However, the ultimate challenge is to explain the benefits of being certified as a PAN Park (see table 2) and develop additional support to make PAN Parks a sustainable, self-financing organization that is recognized as the premium European ecotourism/ wilderness brand and serves as a global role model for conservation and economic benefit for protected areas, and their local communities and business partners. IJW

Figure 4—Nature-based tourism includes relaxation in wild places. Photo courtesy of Pascal Languillon.

Figure 5—Filming in the Retezat National Park Wilderness Area in Romania. Photo courtesy of Tudor Predescu.

Table 1. The size of wilderness areas in Certified PAN Parks

National Park	Park Areas (ha)	Wilderness Areas (ha)
Bieszczady	29,202	18,425
Fulufjället	38,414	22,140
Oulanka	27,720	15,027
Central Balkan	71,669	21,019
Retezat	38,138	14,215
Panajarvi	104,000	30,000
Rila	81,046	16,350
Majella	74,095	16,200
Borjomi Kharagauli	76,000	50,325
Archipelago	50,219	10,600
Total	**590,503**	**214,301**

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Table 2. Benefits of PAN Parks

The benefits of PAN Parks for the protected areas:

- International recognition
- Independent audit
- Easier access to sponsorship of conservation and tourism project
- Expertise exchange through a living network
- Tools:
  - set priorities for building conservation capacity
  - measure progress
  - employee adaptive management
  - improve nature management standards
  - control and monitor tourism, etc.
  - support in lobbying decision makers

The benefits of PAN Parks for the local communities:

- Increased collaboration in park management
- Small business promotion
- Showcase for traditional crafts and culture
- Improved tourism facilities
- Stronger government support
- International recognition
- New jobs and increased employment, etc.

The benefits of PAN Parks for the local business partners:

- Contact with European tourism companies
- More nature-based tourism
- Effective international marketing
- Support in development of tourism package
- Training services
- Prove responsible businesses
- Access experience of other businesses, etc.

Continued from WILDERNESS RESTORATION, page 32

disagreement. At one extreme, we can avoid "playing God" by never intervening in wilderness ecosystems. At the other extreme is the belief that intervention cannot be avoided and that we must decide what we value in wilderness and work to protect it—even if this involves actions as drastic as assisted migration and transformation of ecosystems to ones that are compositionally and structurally different from the present or past. Concepts such as ecological integrity and resilience will need to supplement—if not replace—the traditional concept of naturalness. The ultimate workshop conclusion was that this important issue cannot be ignored but that it is not clear what path to take. It is time for society to reconsider and/or better articulate the purposes and values of wilderness now that we know more than we did in 1964 about the world and how it is changing.

Whereas philosophical issues need to be addressed before undertaking large-scale wilderness restoration, small-scale restorations are less controversial. Success here largely turns on technical issues. In this arena, the Leopold Institute has been working to increase the success of efforts to restore recreation sites. We have been conducting long-term experiments that evaluate the effectiveness of commonly employed site restoration techniques (Cole and Spildie 2007). We also collaborated in the compilation of both experiential and technical knowledge in a 394-page guide to wilderness site restoration (Therrell et al. 2006). Up-to-date information on the institute's restoration research is available at http://leopold.wilderness.net/research/fprojects/F008.htm. IJW

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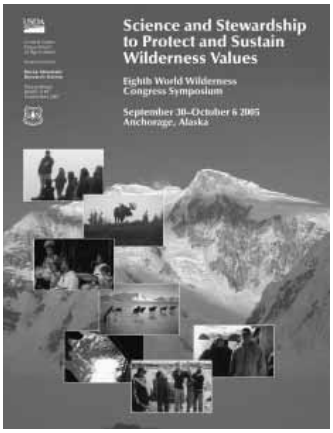
If we restore past conditions, those communities are likely to be dysfunctional—no longer appropriate for future climates.

Announcements

COMPILED BY GREG KROLL

8th WWC Science and Stewardship Proceedings Now Available



The proceedings of the science and stewardship symposium of the 8th World Wilderness Congress are now available online, where the entire document, or individual papers, may be downloaded. The papers generated at this symposium, the largest of multiple symposia offered in conjunction with the Congress held in Anchorage, Alaska, in 2005, have been organized into nine major themes: (1) Alaska: past, present and future; (2) connections between wilderness and communities; (3) values to local and distant societies of wilderness protection; (4) establishing priorities and developing policies for wilderness protection; (5) wilderness stewardship challenges in a changing world; (6) encouraging stewardship through education: (7) place and spirit: commitment to wilderness; (8) protecting ecological integrity of wilderness; and (9) wilderness, water, and wisdom. The online publication may be accessed at www.fs.fed.us/rm/pubs/rmrs_p049.pdf, where printed copies and CD versions may also be ordered.

Wilderness Website Available in Spanish

A new Spanish language website launched by the U.S. National Park Service showcases America's wilderness areas. The interactive site, www.nature.nps.gov/views/index_wilderness_sp.htm, explores wild places through activities, maps, information, videos, and interviews. A facet of the "Views of National Parks" program, it was developed in partnership with the Arthur Carhart National Wilderness Training Center and the University of Montana's Wilderness Institute. "This website will connect more people to the concept of wilderness," said Roger Rivera, founding president of the National Hispanic Environmental Council. "Wilderness is important for science, for outdoor recreation, and for personal renewal. Wilderness areas are places where we can challenge ourselves, connect with the earth, enjoy the wild, and make memories with our families." The website was commissioned by the Interagency Wilderness Policy Council, consisting of representatives from the National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, and U.S. Geological Survey.

Sitio de Internet sobre Zonas Naturales Disponible en Español

Un nuevo sitio de Internet en español lanzado por el Servicio de Parques Nacionales de los EE.UU. presenta la belleza e importancia de las zonas en estado natural de aquel país. El sitio interactivo, www.nature.nps.gov/views/index_wilderness_sp.htm, explora zonas naturales por medio de actividades, mapas, información, videos y entrevistas. Un aspecto del programa "Views of National Parks", fue creado conjuntamente con el Arthur Carhart National Wilderness Training Center y el Wilderness Institute de la Universidad de Montana. "Este sitio de Internet conectará a más personas con el concepto de zonas naturales", dijo Roger Rivera, presidente y fundador del National Hispanic Environmental Council. "Las tierras naturales son importantes para las ciencias, la recreación al aire libre y la renovación personal. Las zonas naturales son lugares donde podemos asumir desafíos, estar en contacto con la Tierra, disfrutar la vida silvestre y crear recuerdos para nuestras familias". El sitio de Internet fue encargado por el Interagency Wilderness Policy Council, que está compuesto por representantes del National Park Service, Servicio Forestal de Estados Unidos (U.S. Forest Service), Oficina de Administración de Tierras (Bureau of Land

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

Management), Servicio de Pesca y Vida Silvestre de Estados Unidos (U.S. Fish & Wildlife Service) y el Servicio Geológico de los Estados Unidos (U.S. Geological Survey).

Canada Sets Aside Vast Northern Wilderness

Much of the Earth's largest intact forest was formally withdrawn from development in November 2007 by the Canadian government, preserving 25 million acres (10 million ha) of wildlands in the Northwest Territories. This swath of boreal forest, part of a broad band of vegetation that circles a northern tier of the globe from Canada to Siberia, will be protected to create a national park, a national wilderness area, and a conservation area administered by native communities. Native groups and environmentalists have been working to designate these lands for years, and the action by the Ministries of Environment and Indian affairs will prevent mining, drilling, and most timber cutting in the areas. The region has recently been subject to increasing interest by diamond, uranium, and oil and gas developers.

A 6.5 million acre (2.6 million ha) national park will be established on the eastern shore of Great Slave Lake, a glacier-carved body of water that is home to grizzly bears and caribou, as well as the 400-member Lutsel K'e Dene tribe. A 15 million acre (6 million ha) conservation area administered by the Akaitacho tribe will buffer the new park. To the west, a 3.7 million acre (1.5 million ha) national wildlife area will be created in the Ramparts region, where towering cliffs line the Mackenzie River, and where vital wetlands border the Ramparts River.

The protected lands encompass an area 11 times the size of Yellowstone National Park. "The whole scale of the boreal landscape is staggering for an American," according to Joshua Reichert, managing director of the Pew Environment Group, which helped shepherd the projects. And Lutsel K'e Dene Chief Adeline Jonasson is equally pleased. "We're very happy with this," she said. "This area is the one our ancestors chose for us to live in. This will preserve it for generations to come." (Source: The Washington Post, November 22, 2007)

European Resolution on Wilderness Seeks Urgent Action

The EUROPARC Federation and the PAN Parks Foundation have joined forces in the publication of a Resolution on Wilderness Areas, which was drafted following an international roundtable meeting held in the Czech Republic attended by some 300 protected area experts from 24 European countries. The resolution, dated October 1, 2007, states, "We the undersigned organizations call upon the European Commission and the [European Union] member states to take urgent action to protect Europe's remaining large areas of natural habitat with non-intervention management, also known as wilderness or wildland, which are threatened by inappropriately located logging and development. … In addition to containing an irreplaceable European natural heritage of biodiversity and habitats, these areas can offer stronger sustainable economic, social, cultural and environmental benefits—for local communities, landholders and society in general—if left intact. Such benefits include addressing climate change through carbon sequestration and flood mitigation, fast-growing nature-based tourism opportunities, and potential to help tackle important inner city issues such as youth development and healthcare. … ."

The EUROPARC Federation is the umbrella organization of Europe's protected areas. It unites national parks, regional parks, nature parks, and biosphere reserves across the continent with the common aim of protecting Europe's unique variety of wildlife, habitats, and landscapes. PAN Parks is an initiative that combines nature conservation with sustainable tourism development to create a network of the best-managed wilderness areas in Europe. There is currently a network of nine certified PAN Parks stretching from the Arctic Circle to the Mediterranean. (Sources: www.panparks.org; www.panparks.org/index.php?name=OEDocManager&file=download&id=2128&keret=N&showheader=N)

Rewilding Scotland

In an attempt to establish "the biggest enclosed wilderness reserve in Europe," owners of Scotland's Alladale Estate intend to create Britain's first ecological game preserve. Philanthropist Paul Lister plans to turn the clock back more than 2,000 years on his 23,000 acre (9,300 ha) property, only 25 miles (40 km) from the bustling city of Inverness. Besides planting more than 250,000 indigenous trees, including Caledonian pine, juniper, hazel, and round birch, Lister will reintroduce native lichens and grasses. He has secured his Dangerous Animals License from the Highland Council, and according to Alladale's general manager Hugh Fullerton Smith, "as soon as the foot and mouth regulations die down," Lester will begin the process of restoring an ecosystem with the introduction of elk from Sweden. In a plan that involves building 37 miles

(60 km) of electric fence, the longest in Europe, Lister hopes to reintroduce the European gray wolf (hunted to extinction in Scotland in 1743) and bear, which was driven out 900 years ago. According to Lister, the attempt to rewild the reserve takes some of its inspiration from the Shamwari Game Reserve near Cape Town, South Africa, where lion, leopard, buffalo, rhino, and elephant have been successfully reintroduced. At Alladale, he says, "there will be more wilderness and there will be no stalking or shooting." (Source: *The Observer,* August 12, 2007)

Latin America Regional Parks Congress

From September 30 through October 6, 2007, more than 2,200 delegates from Latin America and beyond convened in Bariloche, Argentina, for the Second Latin American Congress on National Parks and Protected Areas. The Congress was hosted by the Argentine National Park Administration and was cosponsored by FAO, UNEP, and IUCN with strong support from many conservation and aid agencies. The Congress focused on four main themes—biodiversity conservation; advances and challenges in knowledge and information on management of protected areas; capacity building; and governance, equity, and quality of life. Keynotes, symposia, and workshops addressed the region's considerable achievements in consolidating a regional protected area system over the past decade. These included innovative governance arrangements and funding sources and the growing role of civil society and local and regional governments and private landowners in protected area management. There was also recognition of the role of protected areas in poverty alleviation strategies, in providing vital environmental services such as fresh water and recreational opportunities and in mitigating impacts of climate change and natural disasters. Major threats to and weaknesses of the regional protected areas system were also reviewed, including remaining ecological gaps in the region's protected area system. A huge disparity remains between the size of terrestrial protected areas systems, which now cover more than 10% of the region, and the situation in the freshwater realm and in the region's oceans. Latin America is far from reaching global goals of 10% coverage by 2012 for marine protected areas—less than one half of one percent of the region's seas is protected.

Participants indicated their concern about the increasing impact of mineral and oil exploration in and around protected areas, the potential impact of the biofuel boom and continued agricultural expansion, unchecked mass tourism and land speculation in and around parks, unsustainable levels of use of fisheries, wildlife and forest resources, encroachment by poverty-stricken local communities, land tenure and use conflicts, forest fires, and large-scale infrastructure development. The urgency of looking beyond the borders of individual parks and reserves and of addressing conservation at the landscape and seascape scale was also addressed. The Congress ended with deliberations to reach consensus on the Bariloche Declaration, the official statement of the 2,200 participants that is intended to serve as a road map for action to consolidate the regional protected area system over the next decade. (Sources: Jim Barborak, Conservation International and www iucn.org/themes/wcpa/newsbulletins/indexnews/indexnews.htm [October 2007]; www.iuch.org/ themes/wcpa/wcpa/packardalphabetical.htm [in Spanish])

WCPA Bestows Two Awards at Latin American Parks Congress

Peruvian Dr. Carlos Ponce del Prado, and Colombian Heliodoro Sanchez, were recognized by the World Commission on Protected Areas (WCPA) during the Second Latin American Congress of National Parks and Other Protected Areas, held at San Carlos de Bariloche, Argentina, September 30–October 6, 2007. The WCPA Packard Award was given to Dr. Ponce posthumously, with a presentation to a group of Peruvian National Park leaders. He was a university professor, director of Peruvian national parks from 1969 to 1973, cofounder of the Peruvian Foundation for Nature Conservation (ProNaturaleza), and cofounder of Conservation International. Dr. Ponce was recognized for his professionalism as well as his humanity.

Dr. Heliodoro Sanchez received the first-ever Kenton R. Miller Prize for Innovation in Protected Area Sustainability, consisting of a certificate and a check for US$5,000. The impacts of his work have led to expanded protection of rapidly disappearing mangrove ecosystems, and the creation of new opportunities for local communities to utilize these resources on a sustainable basis. Dr. Sanchez is one of the principal pioneers who initiated the planning and establishment of national parks in Colombia, and during his nine years as director of national parks he established the National System of Protected Areas. He serves as professor of forestry at the District University of Bogotá, where he has taught for 22 years.

The Latin American Parks Congress is held every 10 years. The Bariloche Congress was attended by 2,200 individuals from 34 countries, and featured four symposia (with accompanying workshops): conservation; knowledge; capacity building; and governance and equity. According to Dr. Kenton Miller, senior advisor to the WCPA, "it was a very significant session for its inclusion of many young conservationists engaged in parks and reserves around the region, and for the involvement of indigenous peoples, political leaders, scientists, non-governmental organizations, and government officials." According to Dr. Miller, one important initiative addressed the relationship between established Protected Areas and the claims and interests of indigenous peoples in the region, especially where such territories overlap. (Sources: see article above titled "Latin America Regional Parks Congress")

Severe Climate Change Threatens Protected Areas

Climate change affecting protected areas in some countries will be so severe that resulting environments will be virtually new to the planet, according to a study authored by Sandy Andelman and presented at the U.N. climate change talks in Bali, Indonesia, in December 2007. Scientists from Conservation International, the University of Wisconsin, and the University of Maryland analyzed the World Protected Areas Database with 10 global climate models and three different scenarios examined by the U.N. Intergovernmental Panel on Climate Change. They found that under the most likely scenario, more than half the world's protected territory is vulnerable to impacts of climate change, with some regions facing the disappearance of current climatic conditions by 2100 or a transition to conditions not found on Earth in the previous century.

Countries where 90% or more of the total protected territory has climate conditions that will disappear globally or be transformed to novel climates are Benin, Bhutan, Bolivia, Burkina Faso, Burundi, Colombia, Cuba, Ecuador, Ethiopia, Ghana, Guyana, Ivory Coast, Mexico, Niger, Rwanda, Sri Lanka, Sudan, Swaziland, Togo, Uganda, and Venezuela. The study identified "refuge" countries where protected areas face minimal risk from climate change, including Botswana, Equatorial Guinea, Gabon, Guinea-Bissau, Liberia, Libya, Madagascar, Mali, Mauritania, Mozambique, Myanmar, Namibia, Saudi Arabia, Sierra Leone, and Somalia. (Source: http://conservation.org/newsroom/pressreleases/Pages/121007.aspx)

Bear Species Threatened with Extinction

Six of the world's eight species of bears are threatened with extinction, according to recent assessments by the World Conservation Union's (IUCN) Bear and Polar Bear Specialist Group. Asia and South America are identified as the areas most in need of urgent conservation action. At the group's meeting in Monterrey, Mexico, in November 2007, the status of the seven species of terrestrial bears was updated. Vulnerable species include Asiatic black bears and sloth bears, both inhabitants of Asia, and Andean bears (formerly called spectacled bears) from the Andes Mountains of South America. Although hunting bears is illegal throughout southern Asia, bears suffer heavy losses from poachers who risk the small chance of being caught against lucrative gains from selling parts, especially paws and gall bladders. The world's smallest species of bear, the sun bear, has been classed as "vulnerable," and the giant panda remains in the "endangered" category on the IUCN Red List of Threatened Species. Polar bears, listed in 2006 as "vulnerable," are technically classified as marine mammals.

Brown bears, the most widespread ursid, are not listed as threatened globally because large numbers still inhabit Russia, Canada, Alaska, and some parts of Europe. Grizzly bears—brown bears living in interior North America—are considered "threatened" under the U.S. Endangered Species Act outside of Alaska. Among the eight species of bears, only the American black bear is secure throughout its range, which encompasses Canada, the United States, and Mexico. At 900,000 strong, there are more than twice as many American black bears than all the other species of bears combined. (Source: www.iucn.org/en/news/archive/2007/11/12_pr_bear.htm)

Wilderness Task Force to Meet at IUCN Conference in Spain

The triennial World Conservation Congress (WCC) of the World Conservation Union (IUCN), meets in Barcelona, October 5–14, 2008. Many thousands of conservationists from the IUCN's 147 member countries will gather for all or part of the 10-day session packed with plenary sessions, commission meetings, workshops, trainings, and more. The Wilderness Task force—an official part of IUCNs World Commission on Protected Areas, and cochaired by Vance Martin (president, The WILD Foundation) and Khulani Mkhize

(CEO Ezemvelo KZN Wildlife)—will meet during the WCC, and is integrally involved in assuring that the wilderness protected area category (1b) is maintained and strengthened as changes to the Framework for Protected Areas are debated and adopted by the General Assembly. For more details on the Barcelona Congress, www.iucn.org/congress/2008/, and for the Wilderness Task Force http://wtf.wild.org/.

New Publications from The WILD Foundation

Three new publications are available during 2008 from the WILD Foundation as a follow-up from the 8th World Wilderness Congress (Alaska, 2005). *A Handbook on International Wilderness Law and Policy*, edited by Cyril Kormos (Fulcrum Publishing, 2008), is the first handbook of its kind presenting a comparison of the many different ways in which wilderness is protected through legal and other policy means around the world. *Protecting Wilderness on Native Lands: The Native Lands and Wilderness Council*, edited by Julie Cajune, Terry Tanner, and Vance Martin, is a compilation of case studies specifically demonstrating how native communities in many countries are specifically protecting wilderness on their ancestral lands. *Wilderness, Wildlands and People: A Partnership for the Planet*, edited by Vance Martin and Cyril Kormos, present the edited plenary proceedings of the 8th World Wilderness Congress. Information and purchase are available at http://www.wild.org/Store/Publications_Store.htm.

Book Reviews

American Wilderness: A New History
Edited by Michael Lewis. 2007. Oxford University Press. 293 pp. $19.95 (paperback).

William Cronon's book chapter "The Trouble with Wilderness" was an important watershed in the academic history of the wilderness. The rift between the "traditional" historians, perhaps best reflected in Nash's seminal *Wilderness and the American Mind*, and the "new" historians, such as Cronon and Callicott, who used a postmodern, constructivist perspective to reexamine wilderness, has still not yet quite healed. Tension remains between academics and advocates who use a realist perspective versus the new academics and advocates who have embraced the relativist perspectives of the new historians. However, as manifested in this edited book, it is clear that the postmodern historical perspectives help discover new perspectives on the complex relationship between humans and wilderness.

Happily, there are many similarities between the old and new histories of wilderness. Many of the same events (e.g., Wilderness Act), people (e.g., Thoreau, Muir), and places (e.g., Hetch Hetchy) can be found in both histories. The primary difference between the two is that these authors explicitly note the effects of the temporal, spatial, and contextual realms in creating several (often previously hidden) assumptions in the changing conceptions of wilderness.

In the Introduction, Lewis notes five themes in this book: a history of the wilderness movement, an analysis of how other groups (e.g., indigenous peoples, backwoods settlers) were affected by the creation of protected areas; the change in ideas that shape and reflect the wilderness ideal (e.g., landscape painting, poetry); the link between the wilderness movement and nationalism; and the expansion of industry, settlements, and agriculture and its impact on wilderness. Again, these themes are also found in traditional histories, but different perspectives and epistemological stances are often taken in these new analyses. It was heartening to see many new authors in this book, which suggests that the academic discourse on the history of wilderness is still alive and well.

The 15 chapters run in a roughly chronological order. After a useful Introduction that clearly discusses the break between traditional and (post-) modern historians, chapters on a range of familiar issues are covered, including conceptualizations of wilderness at first contact (both Spanish and British); the thorny relationship between farmers and wilderness; wilderness and conservation science; wilderness politics; landscape painting and the representation of wilderness; the impact of

various religious sects on wilderness thought; and Thoreau's discussion of wilderness. Many authors provide new perspectives on issues, people, and events that have long been debated in the wilderness literature, so much so that I was often disappointed to come to the end of many chapters! Lewis has assembled a highly recommended book that provides additional post-modern analyses of the critical topics within the history of the wilderness concept in past and present society. All wilderness scholars and advocates should have a copy of this book.

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

Rebel on the Road: And Why I Was Never Neutral

By Michael Frome. 2007. Truman State University Press. 346 pp. $28.95 (cloth).

What a life Frome reviews in this autobiography! Born Michael Fromm in 1920, the stigma of being born poor, Jewish, and with a large facial birthmark seemed to generate a need to constantly prove himself while challenging authority. He hid his Jewish background and Americanized his name in response to the flagrant prejudice of the times, and by the time he was a teenager was reading and sympathizing with the rising communist movement. One of the few things he enjoyed at school (high school and, briefly, college) was working at the school newspaper. While working at various other jobs as a young adult, Frome hungered to be a journalist, the type of journalist who would take on the issues of the day and fight for "the people." He had just started his career as a journalist when Pearl Harbor was attacked: Frome soon joined the Air Force and worked as a navigator, allowing him to see more of his country and the world.

Eventually, after several newspaper jobs, Frome joined the American Automobile Association (AAA) as the travel editor. It was here that Frome slowly became interested in national park, wilderness, and conservation issues. However, Frome admits that the lack of any other writers covering these topics helped persuade him to continue writing on these issues; it also appealed to his ever-present desire to challenge the status quo. In 1966, he became a magazine columnist for Americans Forests, and later wrote for Field and Stream. He was fired from both positions for his unwillingness to compromise, but this battle ethic also gained the respect of his peers. For example, in 1972 The Wilderness Society asked him to write a book for their cause (*Battle for the Wilderness*), one of the many books Frome has published. He later entered academia, gaining his PhD at age 73.

Looking back, Frome notes that his life and career was largely based on his unhealthy need to constantly prove himself, a sensitivity inculcated in his childhood. He was always "trying to prove something, never content with who, or where, I was" (p. 271). Perhaps the greatest pleasure of the book is to feel the wisdom that has come with Frome's aging, and the eventual peace and contentment that developed late in his life. This book, then, is not an analysis of Frome's role in the rise of the modern environmental movement, or his place among the leaders in American conservation. Although I was at first disappointed with Frome's unwillingness to describe the people and events that shaped the modern environmental movement, as I continued reading the book, I became enamored with the description of his remarkable life's journey from a "frustrated, frightened, and unfulfilled" (p. 270) man ashamed of his past, to one who has finally found contentment, and who wishes to share the joys of such a personal transformation.

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