THE GEORGE WRIGHT
FORUM
A JOURNAL OF CULTURAL AND NATURAL PARKS AND RESERVES
Volume 13 ❖ 1996 ❖ Number 4

THE JOURNAL OF THE GEORGE WRIGHT SOCIETY
Dedicated to the Protection, Preservation and Management
of Cultural and Natural Parks and Reserves
Through Research and Education

The George Wright Society

The George Wright Society is a member of
US/ICOMOS (International Council on Monuments and Sites—U.S. Committee),
IUCN—The World Conservation Union, and
The Natural Resources Council of America

ISSN 0732-4715

Editorial guidelines may be found on the inside back cover.
Text paper is made of 50% recycled fibers.
Printing is by Weber & Sons, Park Falls, Wisconsin.

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On the Cover:
Orchid collecting in the cloud forest of Sierra de San Luis, Venezuela. *Photo by Larry Hamilton*

Society News, Notes & Mail

1997 GWS Conference on the Horizon....

A preliminary program featuring 50 concurrent sessions highlights events at the 9th Conference on Research and Resource Management in Parks and on Public Lands. The next GWS biennial conference (co-sponsored by the U.S. National Park Service, Eastern National, and USGS-Biological Resources Division) will be at the Albuquerque Marriott, March 17-21, 1997. Response to the Call for Papers was outstanding, with over 250 abstracts submitted. The concurrent sessions were totally filled, and the poster session has over 40 participants so far. The plenary sessions will feature the conservationist Dave Foreman, historians Richard White and Daniel Jordan, and conservation biologist Phil Pister, as well as a concluding discussion of the NBS-to-USGS transition.

There is still time to register for the conference, but move quickly—rates go up on February 21. And conference-discounted rooms at the Marriott are expected to go fast. For more information and registration materials, visit the conference Web site:

http://www.portup.com/~gws/gws97.html

Or contact the GWS Office at P.O. Box 65, Hancock, MI 49930-0065 USA; telephone 906-487-9722; fax 906-487-9405; e-mail: gws@mail.portup.com.

... And So is SAMPA III

Calgary, Alberta, will be the setting for the Third International Conference of Science and the Management of Protected Areas (SAMPA III), May 12-16, 1997. The SAMPA conferences serve as a forum for presenting and discussing current perspectives on the role of science in managing protected areas and the role of protected areas in the conduct, support, and promotion of scientific research. As at the first two SAMPAs, a special marine symposium will again be part of the conference. The theme of SAMPA III, "Linking Protected Areas with Working Landscapes—Conserving Biodiversity," will profile five environments: Marine, Prairies, Mountains, Boreal Forest, and the North. Some of the suggested topics include:

- Linking protected areas and working landscapes
- Biodiversity in protected areas
- Greater ecosystem concepts
- Linking mountain landscape corridors

- Cross-boundary issues: air, water, wildlife
- Maintaining ecological integrity and biodiversity

Abstracts for papers, posters, workshops, panels, or exhibits are due January 17, 1997. For instructions, contact: Patricia Benson, SAMPA III Conference Secretariat, #552, 220 4th Avenue SE, Calgary, Alberta T2G 4X3 Canada; telephone 403-292-4519; fax 403-292-4404; e-mail: sampa3@pch.gc.ca.

New Members Join GWS Board

The results of the 1996 GWS Board elections were tallied and confirmed at the fall Board meeting in San Francisco. In a very close vote, Robert J. Krumenaker edged out Gary Larson for the seat of retiring Board member Steve Veirs. Bob is the unit leader of Shenandoah National Park's Center for Resources, overseeing and integrating natural and cultural resource management and research programs in the park. The seat of retiring Board member Stephanie Toothman was won by Laura Soullière, who ran unopposed. Laura is currently the superintendent of Arkansas Post National Memorial, and has written extensively about park architecture and design, as well as the visual quality of the built environment in national parks. The seat of the third retiring Board member, George J. Minnucci, Jr., will be filled by appointment shortly.

Parks Magazine Explores Climate Change

The June 1996 issue of *Parks* magazine (published by the IUCN Protected Areas Programme) is devoted to "Climate Change and Protected Areas." As Jonathan Loh points out in his lead-in editorial, the Intergovernmental Panel on Climate Change (IPCC)—the U.N. body responsible for the science of climate change—issued a comprehensive assessment of the world's climate in December 1995. This exhaustive report (which runs to 2,000 pages) discusses all the repercussions of a possible 1-3.5°C rise in average global temperatures over the next 50-100 years: sea-level rise, glacier shrinkage, changes in major vegetation types, desiccation of wetlands, and so forth. All of this has crucial implications for protected areas, of course. The feature articles are:

Protected area management in the face of climate change • Peter B. Bridgewater

Potential impacts of predicted climate change on mangroves: implications for marine parks • Joanna C. Ellison

Impacts of climate change on selected ecosystems in Europe • David Stone

Ecosystem resilience, biodiversity and climate change: setting limits • Jay R. Malcolm & Adam Markham

Legal brief: The United Nations Framework Convention on Climate Change (The Climate Convention) • Adam Markham & Jonathan Loh

Single issues are £8.80 (postpaid) to addresses outside the United Kingdom. To order, contact: PARKS, 36 Kingfisher Court, Hambridge Road, Newbury RG14 5SJ United Kingdom.

GWS Internet Source List Updated, Expanded

By the time you read this, the GWS home page on the Web will have been given a makeover to make it easier to use. While we were at it, we redesigned, updated, and significantly expanded one of the Web page's most popular features, the "Internet Resources for Park Professionals." What sets this apart from your run-of-the-mill hotlist (in our humble opinion) is that it is an annotated source list, not just an endless scroll of undifferentiated URLs. We try to indicate, briefly, the value of the link—and we provide direct links to subpages of valuable information, not just links to top-level home pages. If you haven't been there, try it! Go to **http://www.portup.com/~gws/home.html** and then click the "Internet Resources" button. And send us your favorite park-related links using the new on-line form provided.

37 New World Heritage Sites Named; 4 Added to "Danger" List

Meeting in Merida, Yucatan, Mexico, in early December 1996, the World Heritage Committee added 5 natural, 30 cultural, and 2 mixed sites to the World Heritage List of places "of outstanding universal value." These additions bring to 506 the number of sites on the List; they are located in 107 countries around the world. The 21-member World Heritage Committee meets annually to select sites from among those suggested by the 147 nations that are currently parties to UNESCO's 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage.

A sampling of the new additions:

- "W" National Park, Niger, is in a transition zone between savanna and forest lands. It reflects the interaction between natural resources and humans since Neolithic times and illustrates the evolution of biodiversity in this zone.

- Lake Baikal, Russian Federation, is the oldest (25 million years) and deepest (1,700 m) of the world's lakes. Its age and isolation have produced one of the world's richest and most unusual freshwater faunas, which is of exceptional value to evolutionary science.
- Lushan National Park, China, is one of the spiritual centers of Chinese civilization. Buddhist and Taoist temples, along with landmarks of Confucianism, where the most eminent masters taught, blend well into the strikingly beautiful landscape of Mount Lushan.
- The Bauhaus and its sites in Weimar and Dessau, Germany, represent the Bauhaus School, which revolutionized architectural and aesthetic concepts and practices between 1919 and 1933. The buildings put up and decorated by the school's professors (Walter Gropius, Hannes Meyer, Laszlo Moholy-Nagy, Wassily Kandinsky) launched the Modern Movement which shaped much of 20th-century architecture.
- Hiroshima Peace Memorial (Genhaku Dome), Japan, was the only structure left standing near the site of the explosion of the first atomic bomb on August 6, 1945. It is a stark and powerful symbol of the most destructive force ever created by humans, as well as of the hope for peace.

The Committee also inscribed four sites on the List of the World Heritage in Danger: Simien National Park, Ethiopia (threatened by road construction and population increase); Rio Platano Biosphere Reserve, Honduras (advancing agriculture); Ichkeul National Park, Tunisia (dam construction); Garamba National Park, Zaire (poaching). This brings to 22 the total number of sites inscribed on the List in Danger.

— Source: Peter Stott, ICOMOS

Rick Smith

Trends in International Conservation: Lessons for North American Protected Areas

Before we think about recent trends in international conservation, especially in the developing world, we might want to consider the following statistics:[1]

If we could, at this time, shrink the Earth's population to a village of precisely 100 people, with all existing human ratios remaining the same, it would look like this:

- There would be 57 Asians, 21 Europeans, 14 from the Western Hemisphere (North and South America), and 8 Africans.
- 70 would be non-white; 30 white.
- 70 would be non-Christian; 30 Christian.
- 50% of the entire world wealth would be in the hands of only 6 people. All 6 would be citizens of the United States.
- 70 would be unable to read.
- 50 would suffer from malnutrition.
- 80 would live in sub-standard housing.
- Only 1 would have a college education.

Obviously, when one considers these statistics, it is clear that conservation strategies currently employed in the developed world are probably not altogether appropriate in countries where educational levels are low; where basic health services are marginally available, if at all; where basic subsistence is a major problem, where resources utilization is at its most basic level—subsistence farming, marginal livestock herding, cutting of firewood for cooking and heating; and where basic government services are directed at providing its citizens with the most critical of human needs: food, shelter, and health services.

Under these conditions, it will not be surprising that many developing countries suffer from similar problems in relation to their programs for manag-

[1] Taken from data compiled by the United States Peace Corps and furnished in personal communication from the Office of Training and Program Support.

ing their protected area systems. Almost all suffer from exploding population growth, with a significant percentage of their populations under 15 years of age. This means increasing pressure on existing protected areas with the prospect of even greater pressure as these young people reach the child-bearing age. This increase in population means a rapidly expanding agricultural frontier which pushes closer and closer, and, many times, passes the boundaries of already established protected areas. It is not uncommon to see the smoke from slash and burn agriculture emanating from parks and reserves in the developing world, areas which are falling victim to the need among poor people to feed their families. When people are hungry, there is little respect for the boundaries of these protected areas. The extractive industries are aggressively seeking new areas for exploitation. Many of these industries are multi-national or trans-national and practice extractive techniques which would not be permitted in their own countries.

Many agencies in the developing world charged with managing protected areas are under-funded and under-equipped. Rangers don't make patrols because of shortages of vehicles, or, in many cases, sufficient fuel to power the vehicles. This under-capitalization has led to the existence of so-called paper parks, areas which exist in legislation or executive decrees, but which are not managed by government agencies because of the lack of financial resources. Equally critical is the lack of human resources that these agencies can apply to the management of their areas. Most park personnel are not well educated by our standards—many rangers lack even a high school education—and their supervisors and managers, many of whom are university graduates, are immediately thrust into positions of considerable authority without having spent even one day in a protected area. Those assigned to parks or reserves often live under conditions that most of us wouldn't tolerate for a nano-second—bad housing, lack of decent food, assignments away from their families, lack of respect from people with whom they have to deal, little or no equipment with which to do their work. I have called these people the real heroes of the conservation movement.

Oftentimes the agencies with responsibility to manage parks have not developed consistent policies for the implementation of conservation strategies, hampered by government lack of attention or political interference. Finally, there is woefully little science or research being done in developing-country protected area systems, and managers are often forced to make decisions without even basic inventory or projected-effects information.

Given all these problems, it may appear a paradox that some of the most interesting experimentation in the management of protected areas is going on in the developing world, proving once again that necessity is the mother of invention. Let's look at some of the trends that I have observed in the developing world related to protected area management.

To begin with, countries are beginning to shy away from the creation of traditional national parks, recognizing that setting up parks—which implies aggressive management, exclusion of consumptive resources utilization, and purchase in fee of most of the land within the boundaries—is not a rational conservation goal. This trend began to appear in the early 1980s and continues. These countries have begun to experiment with the establishment of protected areas of different categories, favoring those which permit some human habitation within the boundaries, some controlled resources utilization, and which require fewer changes in traditional revenue-generating activities of local people.

Local people, those who live in or near protected areas, have increasingly become the focus of conservation activities. This is perhaps one of the most radical changes in strategy in the developing world. Prior to the early 1970s, most conservationists connected to the developing world considered local people to be an obstacle to management activities. Often, one of the major goals of protected area management was to move local people from the areas which they had traditionally inhabited so that the resources of the area could be managed free from local "interference." Conservationists and developing-world governments, however, have come to recognize one indisputable fact: no conservation program will ever be successful without the support and cooperation from local people. The alternative—setting a armed ranger every 10 meters on the border of a protected area to keep people out—is neither rational nor practical. Conservationists have begun to seek ways to involve local people, not only in the planning process for protected areas, but also in the decision-making process, hoping to make local people their allies in conservation, not their enemies. This, of course, will be a long process as many of these local people, especially if they are indigenous people, have been excluded from the decision-making processes for decades, if not centuries. We will have to find ways to help them participate in a meaningful way so as not to run the risk of making their participation seem superficial, having little effect on the final decisions.

One way to emphasize this focus is to decentralize responsibility for managing protected areas away from the capitals of developing countries to other organizational levels within the government structure. The idea here is that decisions made at local or regional levels will be of higher quality and more attuned to local conditions than will decisions made in some distant capital. While there is much to recommend in this strategy, there is one nagging problem. Bureaucracies do not willingly surrender authority. What has happened in many countries is that responsibility for managing protected areas has been delegated from ministries to local or regional managers, but the authority to make decisions or to allocate financial or human resources is retained at the

ministerial level. This no-win situation must be overcome if decentralization is to deliver on the promises that its defenders claim for it.

Another experiment that aids the decentralization process is for government authorities to cede management control of their protected areas to non-governmental organizations (NGOs). The model that most governments follow in this matter is to establish broad policies within which the NGOs must operate in their management activities. The NGOs then assume active management control of the protected areas. Proponents of NGO management claim certain advantages for this arrangement:

1. NGOs tend to be less bureaucratic than government agencies and therefore are more flexible and efficient in management;
2. NGOs are less susceptible to political influence than are government agencies;
3. NGOs often have access to funding sources which are not available to governments;
4. NGOs can collect funds from users and apply them directly to the protected areas while governments normally have to channel collected funds through the national treasury; and
5. NGOs often have more practical and scientific on-the-ground knowledge of the protected area than do government departments.

NGO management of protected areas is also one of the ways that governments attempt to shift the burden of financing management from the public sector to the private or non-governmental sectors. Since funding is such a critical element for effective management, it should come as no surprise that seeking new ways to finance conservation has produced more experimentation than almost any other area. In some countries, for instance, there has been considerable effort expended to try to make protected areas self-sustaining.

The strategies employed range from the well-known—entrance and user fees, commercial-use licenses and concession permits, visitor "green" taxes, use of volunteers to supplement the activities of civil service employees—to the less familiar: the creation of trust funds for individual protected areas that allow the interest on the capital to finance annual operating expenses; the creation of two-level fee systems, a lower fee for national visitors, and a higher one for international visitors; the marketing of the significance of a nation's protected area system to international donors who seek to promote effective area management; the establishment of small ecotourism activities which allow revenues to stay in local hands as opposed to major tour operators. All these strategies require an integrated, inter-institutional approach to funding protected areas which will require government agencies to give up some of their traditional authority and enter into agreements with groups from the private and non-gov-

ernmental sectors. The fact that the arrangements are working successfully in some countries proves that it can be done, that government agencies can surrender parts of their autonomy to achieve greater results.

I would like to mention one other emerging strategy that is different from the others that I have discussed in this article. There is a trend to reform traditional economic thinking to give more value to natural resources which are preserved, not harvested, or if harvested, to subtract the value of the harvested resource from the nation's natural resources bank. Let's take the example of a mahogany tree. Under current, traditional economics, the tree has no value until harvested. Once harvested, its value on the open market—let's assume it's $20,000—is added to the country's Gross Domestic Product and becomes a part of what the country reports to its creditors and to its citizens as economic growth. There is no corresponding subtraction from the country's gross patrimony account because no such index exists. There is no value ascribed to the ecosystem services that the tree and its surrounding eco-niche—probably destroyed during the logging process—provide: nothing for its ability to prevent erosion, nothing for its contribution to preventing floods, nothing for its ability to recharge aquifers, nothing for its activity in filtering and providing clean water, nothing for its role in converting CO_2 to oxygen, nothing for the possibility of its harboring the next miracle drug, and nothing for its ability to give sustenance to the human spirit. Developing countries have taken the lead in trying to think about this problem and to devise a new economic model which will account for these attributes. In some ways, the solution to this issue may be their greatest contribution to world conservation.

The creation and management of protected areas is, as Roderick Frazier Nash once observed, a gesture of planetary modesty, a recognition that we are not the only passengers on the spaceship earth; we share it with millions of other living organisms. Edward O. Wilson, the biologist, has called our affinity for these other organisms "biophilia," an affinity humans have acquired throughout their evolutionary history. If our colleagues in the developing world are successful in their attempts to preserve important parts of our world's heritage, we will all be richer in spirit for their efforts. They deserve our respect and our cooperation.

Rick Smith is retired from the U.S. National Park Service. He has worked extensively with parks in the developing world.

[Ed. Note: Rick Smith's essay inaugurates "Box Sixty-Five," a new column of commentary from the GWS office and our membership. We welcome lively, provocative, informed opinion from GWS members on anything in the world of parks and protected areas. Essays selected for publication may be edited in consultation with the author. The submission guidelines are the same as for

other GEORGE WRIGHT FORUM articles—please refer to the inside back cover of any issue. E-mailed submissions are not only welcomed, but preferred. Submit essays to:

Box Sixty-Five
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gws@mail.portup.com

[The views in "Box Sixty-Five" are those of the author and do not necessarily reflect the official positions of The George Wright Society.]

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- ✓ And more....

Report from the IUCN World Conservation Congress

Parks Canada was the host for the first IUCN World Conservation Congress, held in Montreal from October 13-23, 1996. Approximately 3,000 delegates, observers, and media representatives participated, making this the largest environmental conference since Rio in 1992. The following is a summary of the highlights of the Congress, with special reference to parks and protected areas.

Canadian Announcements

At the official opening of the Congress, Canadian Prime Minister Jean Chrétien announced interim protection to lands for two new national parks in Canada's Arctic. The first is a large watershed around Wager Bay, representative of the tundra ecosystem. The second, on Bathurst Island, contains the calving ground of an endangered population of Peary caribou. Chrétien pointed out that, in the past six months, the Government of Canada has protected over 60,000 sq km for new national parks—an area larger than the size of Switzerland. He also announced that Canada will shortly be consulting with stakeholders and introducing legislation for the creation and management of a national marine conservation areas system.

New Name—"The World Commission on Protected Areas"

One of six IUCN Commissions, the Commission on National Parks and Protected Areas (CNPPA) has been the foremost international network of experts in parks and protected areas, with over 1,000 invited members from around the world. Now that the Commission has approved a new strategic plan to guide its future actions and is embarking on a fund-raising initiative within the overall IUCN context, Commission members at the recent World Conservation Congress in Montreal decided to adopt a new name: the *World Commission on Protected Areas* (WCPA). There was a broad consensus that this would more easily and accurately communicate the mandate of the Commission to its growing membership and to a broader international audience. The Congress endorsed this proposal effective immediately and also re-elected Adrian Phillips to a second term as Chair of the Commission.

Global Commission Meeting

Approximately 150 Commission members from around the world met for two days in Montreal prior to the World Conservation Congress. The main purpose of the meeting was to identify future priorities for implementing the new Strategic Plan. To do this, workshops were held based on each of the regions of the world, the three theme programs (marine protected areas, mountain pro-

tected areas, and World Heritage Sites) and the Commission task forces (tourism, training, economic benefits, system planning, and information management). Members underlined the importance of partnerships and communications, as well as the need to broaden the Commission membership and encourage volunteer contributions.

North American Regional Meetings

North American Commission members met on October 13, 1996, to review the status of the Regional Action Plan prepared at the October 1995 meeting held in Lake Louise, Banff National Park. Individual project leaders reported on progress to date. In addition, there was a meeting on October 19 of the Commission's Marine and Coastal Protected Areas Working Group for North America, chaired by Jeff Benoit of NOAA (the U.S. National Oceanic and Atmospheric Administration). The result of both these meetings will be a revised Regional Action Plan which will be sent to all Commission members and will be posted on our Web site: http://www.igs.net/cnppa/.

IUCN Resolutions

Among the 133 resolutions debated at the Congress, a significant number dealt with global issues related to parks and protected areas. These included: the CNPPA Strategic Plan, World Heritage Sites, biosphere reserves, protected areas, Ramsar Convention priorities, indigenous peoples and protected areas, marine protected areas, ecotourism, and conservation on community- and privately-owned lands and waters. In addition, there were a number of resolutions addressing North American protected area issues, such as Clayoquot Sound, Temagami forests of northwestern Ontario, Porcupine Caribou herd, and Banff National Park. Copies of the final resolutions as adopted should be available from IUCN early in 1997.

Congress Workshops

One of the highlights of the World Conservation Congress was the four-day workshop program involving ten concurrent streams on a broad range of topics related to conservation and sustainable use. For the first time the workshops were open to members of the public. A number of major workshops focused on protected area topics, including: World Heritage Sites, biosphere reserves, private land stewardship, marine and coastal resources, mountain parks and corridors, and the Canadian experience with park system planning and business planning. It is not yet clear whether papers from these workshops will be published; however, David Sheppard of IUCN (e-mail: DAS@hq.iucn.org) can put you in contact with the workshop coordinators.

— Bruce Amos, WCPA Vice Chair, North America
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Frank Buono

American Indian Private Religious Preserves on Public Lands: The Legal Issues

Introduction

The 1980s gave birth to a new variety of legal conflicts that mixed the religion clauses of the First Amendment to the United States Constitution with the aspirations of certain American Indian tribes. In such cases, the Indian plaintiffs generally alleged that land-management decisions of various federal agencies violated Indians' religious freedom. The Indians (or their interests) were defeated in each case, including the most recent, *Bear Lodge Multiple Use Association v. Babbitt* (1996), which involved a controversy over whether recreational rock climbing should be banned at Devil's Tower National Monument during a period deemed sacred by Indians.

The federal courts have painted a fairly bright line regarding federal land-management decisions and Indian religious claims. The courts have found that closing federal lands to members of the public, or forcing them to refrain from activities on federal lands that are legal otherwise, expressly for the purpose of protecting Indian religious activities, clearly violates the First Amendment's Establishment Clause, which prohibits government actions that establish a religion, or religion generally.

Nonetheless, some tribes continue to insist that federal agencies manage parts of federal land as private preserves for Indian religious purposes. Increasingly, federal land managers, motivated by good intentions, accede to such requests.

Most federal land managers are unaware of court decisions pertaining to the First Amendment's Free Exercise of Religion and Establishment clauses. Without such knowledge, managers may cross the legal line and do harm to the First Amendment. Incidentally, they invite a new class of litigants: those members of the public who have been denied access or use of federal lands because of Indian religious claims.

This article presents the pertinent Indian religion cases within the context of general First Amendment religion decisions.

First Amendment Principles

Several basic principles apply to religion under the First Amendment:

- First Amendment rights of free

dom of speech, assembly, and *religion* are possessed by persons on federal lands, including National Park System areas. See, for example, *A Quaker Action Group v. Morton* (1975).

- First Amendment rights, including the right of Free Exercise of Religion, are not *absolute rights,* free from all government regulation.
- Governmental actions that specifically target religious conduct must "advance [governmental] interests of the highest order."
- Governmental actions that *incidentally* result in restricting free exercise of religion are constitutional as long as such actions are neutral in content, generally applicable, and crafted narrowly to serve a compelling governmental interest.
- Governmental land-management decisions that do not prohibit religious conduct or coerce someone into acting contrary to his or her religion need not demonstrate a compelling governmental interest.

Next, we explore the meaning and origins of these principles and how they affect Indian religious claims.

Free Exercise of Religion and NPS Prohibitions

Religious conduct is not immune to regulation. The United States Supreme Court has long recognized that the Free Exercise Clause of the First Amendment does not exempt religious practitioners from legitimate governmental regulation. In *Braunfield v. Brown* (1961) the court prescribed a balancing test which weighs governmental regulation against "free exercise." The court said: "If the State regulates conduct by enacting a general law within its power, the purpose and effect of which is to advance the State's secular goals, the statute is valid despite its indirect burden on religious observance unless the State may accomplish its purpose by means which do not impose such a burden."

In *Sherbert v. Verner* (1963) the Supreme Court illuminated the *Braunfield v. Brown* standard and developed a two-part test—which is still applicable—to determine if governmental regulation violates free exercise of religion. First, a court must find that the *purpose* or *effect* of a regulation infringes upon religious exercise, whether by coercion or by impeding practice. If so, the court then determines whether a "compelling state interest" outweighs the "infringement."

After *Sherbert*, the Supreme Court fashioned a standard that made it easier for general laws and regulations that indirectly burden religious conduct to pass constitutional muster. That standard was short-lived and is discussed in the endnotes only.[1]

First Amendment scrutiny applies to more than simple outright prohibitions. The Supreme Court, in *Bowen v. Roy* (1986), made clear that the Free Exercise Clause "affords an individual protection from certain forms of governmental compulsion."

Such compulsion may involve either forcing an individual to act contrary to his or her religious beliefs, or forcing an individual, under threat of sanctions, to refrain from religiously motivated conduct. Thus, the federal courts hold that governmental acts that may violate free exercise of religion include those which force an individual to refrain from religious conduct.

In *Lyng v. Northwest Indian Cemetery Protective Association* (1988), the Supreme Court, referring to the 1986 decision in *Roy*, pointed out that indirect coercion or penalties[2] on free exercise of religion are subject to First Amendment scrutiny just as much as are outright prohibitions. The court said: "This Court has repeatedly held that indirect coercion or penalties on the free exercise of religion, not just outright prohibitions, are subject to scrutiny under the First Amendment."

For example, the National Park Service (NPS) regulation at Title 36, Code of Federal Regulations (CFR) 2.1, prohibits hunting and removing natural resources from National Park System areas. Certainly, the regulation, if applied to, say, an Indian hunter in Bandelier National Monument, would penalize the hunter for engaging in conduct that is putatively religious. Although, the regulation may indirectly burden Indian religious observance, that alone does not render the NPS regulation improper.[3] Rather, the regulation is subject to First Amendment scrutiny under *Sherbert.*

Under the *Sherbert* test, the NPS regulation at 36 CFR 2.1 applies generally, and advances the secular purpose of preventing the taking of park resources by the least intrusive means available (i.e., via a "prohibition on take"). The regulation serves a compelling state interest of park protection. The NPS regulation at 36 CFR 2.1 meets the test in *Sherbert* for a governmental action that indirectly burdens religious conduct. No court has ever found otherwise.

Free Exercise and Federal Land Management

Managing federal lands to satisfy Indian religious claims. There is a another, and larger, class of Indian religious claims that differ from those that a federal regulation (like 36 CFR 2.1) prohibits or penalizes Indian religious conduct. This other class of claims asserts that federal agency actions, and not simply prohibitions, also may violate the free exercise of religion by Indians. Such cases are at the heart of this article.

Indian religious practitioners have sought to halt the United States, or the public, from legitimately managing or using federal lands because such uses violate their free exercise rights. The federal courts have consistently rejected such claims, handing plaintiffs instead a long string of defeats. The most prominent of the cases is the Supreme Court decision in *Lyng v. Northwest Indian Cemetery Protective Association* (1988).

Lyng concerned the construction

of a road by the U.S. Forest Service in the Six Rivers National Forest in northern California. The Indians asserted, and the court recognized, that the road construction would interfere significantly with the Indians' religious practice. As noted above, the court pointed out in *Lyng* that indirect coercion or penalties on free exercise of religion are subject to First Amendment scrutiny just as much as are outright prohibitions or coercion.

The *Sherbert* test does not apply to government actions that are neither coercive nor prohibitive in nature. The *Lyng* court drew a sharp distinction between governmental actions (including indirect coercion and penalties) that must be scrutinized under *Sherbert,* and the building of a road on federal lands. *Lyng*, relying on *Bowen v. Roy* (1986), stated that the "Free Exercise Clause affords an individual protection from certain forms of governmental compulsion. It does not afford an individual a right to dictate the conduct of the Government's internal procedures." The *Lyng* court stated that its conclusion on indirect coercion and penalties, reviewed earlier in this article, "does not and cannot imply that incidental effects of government programs, which may make it more difficult to practice certain religions *but which have no tendency to coerce individuals into acting contrary to their religious beliefs, require government to bring forward a compelling justification for its otherwise lawful actions"* (emphasis added).

Thus, lawful government conduct, *or lawful public use of public lands,* that neither compels an individual to act contrary to his or her religion, nor prohibits an individual from engaging in religious behavior, are not subject to scrutiny under the *Sherbert* "compelling interest" test.

The court continued: "The crucial word in the constitutional text is 'prohibit': For the Free Exercise Clause is written in terms of what the government cannot do to the individual, not in terms of what the individual can exact from the government (*Sherbert, supra*, at 412 (Douglas, J., concurring)."

Justice Sandra Day O'Connor, writing for the majority, opined that even if the public program (in this case, the road construction) "would virtually destroy the Indians' ability to practice their religion, the Constitution simply does not provide a principle that could justify upholding respondent's [the Indians'] legal claim [of violation of free exercise rights]. However much we might wish that it were otherwise, government simply could not operate if it were required to satisfy every citizen's religious needs or desires." Justice O'Connor continued: "The First Amendment must apply to all citizens alike, and it can give to none of them a veto over public programs that do not prohibit the free exercise of religion."

In *Means v. Mathers*, a 1988 case, the Eighth Circuit Court contrasted governmental actions in administering federal lands and governmental regulation that compels or prohibits

conduct that violates free exercise of religion. The Eighth Circuit quotes *Roy* to state: "We cannot ignore the reality that denial of ... a benefit [a special use permit for an Indian applicant] from the Government is of a 'wholly different, less intrusive, nature than affirmative compulsion, or prohibition by threat of penal sanctions, for conduct that has religious implications' *Roy*, 476 U.S. at 704, 106 S. Ct. at 2154."

In the end, the construction of the government road on federal lands sacred to Indians was not deemed to violate their free exercise of religion. Many similar cases involving government management of or public access to lands have found no violation of Indian free exercise.[4] Among the most prominent cases in which the courts have found no infringement on Indian free exercise are: *Sequoyah v. TVA* (1980, Sixth Circuit Court); *Badoni v. Higginson* (1980, Tenth Circuit Court); *Hopi Indian Tribe v. Block* (1981, D.C. Circuit Court); *Crow v. Gullet* (1982, Eighth Circuit Court); *Lyng v. Northwest Indian Cemetery Protective Association* (1988, U.S. Supreme Court); *Means v. Mathers* (1988, Eighth Circuit Court); *Manybeads v. U.S.* (1989, D.C., Arizona); *Havasupai Tribe v. U.S.* (1992, U.S. Supreme Court); *Native Americans for Enola v. Forest Service* (1996, D.C., Oregon). *Bear Lodge Multiple Use Association v. Babbitt* (1996, D.C., Wyoming).

Federal Lands, Indian Religion, and the Establishment Clause

The First Amendment's religion language is two-sided. The Establishment Clause is the other side of the coin in the First Amendment. The First Amendment language on religion states: "Congress shall make no law *respecting an establishment of religion*, or prohibiting the free exercise thereof..." (emphasis added). While *Lyng* concerned the construction of a logging road on public land, the Supreme Court anticipated other cases where Indian religious claimants would seek to limit public uses of public lands. The court stated:

> Nothing in the principle for which they [the Indians] contend ... would distinguish this case from another lawsuit in which they (or similarly situated religionists) might seek to exclude all human activity but their own from sacred areas of the public lands.... No disrespect for [Indian religious] practices is implied when one notes that such beliefs could easily require *de facto* beneficial ownership of some rather spacious tracts of public property. Even without anticipating future cases, the diminution of the Government's property rights, and the concomitant subsidy of the Indian religion,would in this case be far from trivial.

One need not search widely to find an instance where Indian religious practitioners sought to halt federal agency actions or to regulate public

conduct on federal (or state) lands deemed sacred by Indians: the 1980 case of *Badoni v. Higginson,* which involved Rainbow Bridge National Monument.

Several Navajo medicine men, "religious leaders of considerable stature among the Navajo," and three Navajo chapters brought suit against the NPS and Bureau of Reclamation. They contended, among other things, "that the presence of tourists" prevented them from holding ceremonies near the bridge in the Monument. This, they asserted, violated their right of free exercise of religion. The Navajo did not seek total exclusion from the Monument of non-Navajo, but did want the NPS to issue rules and regulations to prevent desecration of the Rainbow Bridge area by tourists, and to temporarily close the park to tourists for the conduct of religious ceremonies.

First, the Tenth Circuit Court found that by allowing tourists at Rainbow Bridge, the NPS "had not prohibited plaintiff's religious exercises." The court acknowledged that tourist presence at such exercises may "give rise to plaintiff's complaint of interference with exercise of their religion. We are mindful of the difficulties facing plaintiffs in performing solemn religious ceremonies in an area frequented by tourists. *But what plaintiffs seek is affirmative action by the government which implicates the Establishment Clause of the First Amendment. They seek government action to exclude others from the Monument, at least for short periods, and to control tourist behavior*" (emphasis added).

The court stated that exercise of "First Amendment freedoms may not be asserted to deprive the public of its normal use of an area." The court continued that "we find no basis in law for ordering the government to exclude the public from public areas to insure privacy during the exercise of First Amendment rights." Thus, the presence of non-Indians at Rainbow Bridge did not violate Indian free exercise rights. More importantly, the court found that restricting public access to the federal lands in Rainbow Bridge National Monument on behalf of Navajo religious claims would violate the Establishment Clause of the First Amendment.

Similarly, courts have found that if the Forest Service had desisted from building a ski area in the San Francisco Peaks of Arizona (*Hopi v. Block)* or the logging road in the Six Rivers National Forest (*Lyng v. Northwest Indian Cemetery Protective Association*), based solely on Native American religious objections, the agency would likely commit an affirmative act to protect a religion—an act which is constitutionally impermissible. The Department of the Interior's Field Solicitor in Santa Fe, New Mexico, when confronted with issues of restricting access to park sites (at Chaco Culture National Historical Park) because of Indian religious objections, has also raised Establishment Clause objections.[5]

Devil's Tower Climbing Plan. The most recent case in this string of

precedents arose in February 1995 when the NPS adopted a Climbing Management Plan for Devil's Tower National Monument. The NPS plan requested that climbers voluntarily refrain from climbing the tower in the month of June "in respect for the reverence that many American Indians hold for Devil's Tower as a sacred site...." No one objected to this part of the plan. However, the plan also threatened a compulsory closure of the tower to climbing each June, as one possible result, *if* a voluntary closure did not succeed. Moreover, in 1996 the NPS began placing conditions on Incidental Business Permits (formerly known as Commercial Use Licenses) so that commercial guide services could not lead climbs during the month of June. The NPS adopted this plan despite advice that parts of it had grave Establishment Clause implications. Perhaps the NPS managers believed that legal thinking on the issue raised in *Badoni* had evolved and could now be overturned, or simply toned down. Instead, in June 1996 the NPS received a stinging rebuke that reaffirmed *Badoni* in a clear and forceful manner.

In *Bear Lodge Multiple Use Association v. Babbitt,* the U.S. District Court for Wyoming declared the mandatory climbing restrictions aspect of the plan to be unconstitutional, and issued a preliminary injunction against enforcing that portion of the plan. The court said "affirmative action by the NPS to exclude legitimate public use of the tower for the sole purpose of aiding or advancing some American Indians' religious practices violates the First Amendment's Establishment Clause."

Bear Lodge relied heavily upon *Badoni* and *Lyng* and specifically applied the "Lemon test." This three-part test examines whether governmental actions may violate the Establishment Clause. Slowly maturing in the Supreme Court cases of *School District of Abington v. Schempp* (1963) and in *Walz v. Tax Commission* (1970), the test fully emerged in *Lemon v. Kurtzman* (1971).[6] The Lemon test holds that for governmental actions to comply with the Establishment Clause, they must have a secular purpose, neither advance nor inhibit religion as their principal or primary effect, and not foster an excessive governmental entanglement with religion.

When Massachusetts enacted a statute to permit religious bodies to veto the issuance of liquor licenses within 500 feet of a church or synagogue to protect such religious sites from the hurly-burly of liquor outlets, the Supreme Court found the law violated the Establishment Clause *(Larkin v. Grendel's Den, Inc. [1982]).*

Similar to the Massachusetts law, the NPS Climbing Management Plan for Devil's Tower National Monument partially yielded to Indian religious claimants who sought to exclude certain activities that interfere with, or desecrate, a place sacred to them. As we have seen, the U.S. Dis-

trict Court for Wyoming declared these aspects of the plan to be unconstitutional.

In the *Larkin* case, the unconstitutional Massachusetts law sought to protect houses of worship from the proximity of liquor-licensed businesses. It makes little difference if the religious body being given veto power over the public conduct of others is a church or an Indian religious authority. Nor does it make any difference whether the place of spiritual worship protected by governmental action is a structure, traditional to Western religions, or a geographic feature, traditional to Indian religions. The same principle applies. The *Larkin* principle is that the exclusion of legal public uses because they offend religious believers, or violate sacred or consecrated places, also violates the government's neutrality and thus the Establishment Clause.

More to the point, the courts have found that closures of federal lands to protect Indian spiritual or religious conduct do not meet the Lemon test. First, restricting public use to protect Indian spiritual or religious conduct is not "secular in purpose." Such closures as a "principal or primary effect" do indeed advance religion. Such closures, like the Massachusetts statute on liquor licenses, foster an "excessive governmental entanglement with religion."

Some may argue that since the closures do not officially establish Indian religions, then there is no Establishment Clause question here. But, the Establishment Clause applies to a far broader range of governmental actions than simply granting official status to one specific religion, or to religion generally. As Justice David Souter wrote in *Board of Education of Kiryas Joel Village School District v. Grumet* (1994), "this Court has long held that the First Amendment reaches more than classic 18th century establishments."

The very purpose for proposed federal land closures of sacred sites is to protect certain forms of spiritual or religious practice. That is not a "secular" purpose.

The Establishment Clause and Accommodation

The Free Exercise Clause and the Establishment Clause of the First Amendment are, at times, a difficult fit. The two clauses of this proscription inevitably overlap, and the Supreme Court is occasionally faced with drawing a perplexing boundary between the two. If, for example, the government protects the right of free exercise too vigorously, that protection may well violate the Establishment Clause.

In some cases where the courts are compelled to draw a fine line, the Supreme Court developed the principle of "accommodation."[7] While governmental actions that accommodate religious practice are very often subject to Establishment Clause scrutiny, the Court has found that the state may constitutionally "accommodate" religious observance through laws that alleviate special burdens on a religion.[8] But the

Supreme Court has found that "the principle that government may accommodate the free exercise of religion does not supersede the fundamental limitations imposed by the Establishment Clause" (*Lee v. Weisman* {1992}). Nor is "accommo-dation ... a principle without limits" (*Kiryas Joel v. Grumet* {1994}).

There are instances of accommodation that are specific to Indian religious practices. For example:

- Regulations at 21 CFR 1307.31 exempt the use of peyote, an otherwise controlled substance, in *bona fide* religious ceremonies of the Native American Church. (Upheld as constitutional in *Peyote Way Church of God v. Thornburgh*, 922 F 2nd 1210 {5th Cir. 1991}).
- The Bald Eagle Protection Act, 16 U.S.C. 668(a) permits the Secretary of the Interior to allow the otherwise prohibited possession of eagle feathers for the "religious purposes of Indian tribes." (Upheld as constitutional in *Rupert v. U.S. Fish and Wildlife Service*, 957 F. 2nd 32 {1st Cir. 1992}).
- American Indian Religious Freedom Act Amendments of 1994, 42 U.S.C. 1996, prohibit Federal or State law from interfering with Indian use of peyote for traditional ceremonial purposes.

Can closures be construed as accommodation? The Department of Justice, in a memo of May 21, 1993, to the Office of Management and Budget, examined whether closures of public lands for the privacy of American Indian religious rituals could be construed as "permissible accommodation." The memo was in response to proposed (and, as yet, unenacted) amendments to the American Indian Religious Freedom Act. The Department of Justice memo states that, while "allowing Native American practitioners access to religious sites would probably be viewed as a permissible accommodation of religions and religious practices," "prohibiting the general public from certain areas might be held to be beyond the scope of permissible accommodation...."[9]

Private religious preserves. Proposed closures of federal lands to public use to protect Indian religious practices goes well beyond "accommodation." Such closures abandon government neutrality, single out practitioners of Indian religion for special treatment, and restrict, on that basis alone, the conduct of other park users. Under 36 CFR 1.5, the NPS may close all or part of a park for a host of reasons. Protecting the privacy or sanctity of Indian religious sites is not among them.

Closures propose to modify, by mandatory rule, the conduct of others in society so as not to offend the particular Indians' religiously grounded preferences. A "tourist" at Rainbow Bridge, the courts have found, does not coerce the Indians into violating their religion or acting contrary to their beliefs. Because the tourist's presence is offensive to the Indian religion, even a desecration of a sacred

site, it does not follow that the NPS may restrict conduct on that basis alone. If so, there emerges a near-fusion of governmental and religious functions that is forbidden. (See *Larkin v. Grendel's Den, Inc.* {1982}).

The federal courts also addressed this issue in an Indian context with *Badoni* and *Bear Lodge*. The Tenth Circuit Court quotes from a 1953 Circuit Court decision[10] that "the First Amendment protects one against action from the government, though even then, not in all circumstances; but it gives no one the right to insist that in the pursuit of his own interests others must conform their conduct to his own religious necessities.... Were it otherwise," the *Badoni* court concludes, "the [Rainbow Bridge National] Monument would become a *government-managed religious shrine*" (emphasis added).

Separation of church and state is an alien concept to some tribes. The notion of church-state separation may be alien to some Indian cultural beliefs. The Indian Civil Rights Act of 1968 (25 U.S.C. 1301, *et seq.*) requires that tribes protect the rights of tribal members—rights that other Americans possess. But, unlike the United States Constitution, the Indian Civil Rights Act does not prohibit tribal establishment of religion. This omission was deliberate because it recognized that, in many tribes, religion, government, and daily life are inextricable. However, the NPS is a federal agency whose fundamental nature differs from that of Indian tribes. Nor do NPS and tribal interests always coincide. Unlike tribes, the NPS is governed by the First Amendment prohibition on establishment.

The "Traditional Cultural Practice" Strategy

Perhaps federal land managers can circumvent Establishment Clause questions by closing the lands to protect "traditional cultural practices" rather than to protect sacred sites. What a relief it would be to the courts, if we could avoid Establishment Clause scrutiny for religious activities because we labeled them as "traditional cultural activities" instead. Placement of nativity scenes or menorahs on courthouse steps, prayers at graduation ceremonies, and Bible reading in schools could all be classed as "traditional cultural activities."[11] No need to apply any First Amendment Establishment Clause test.

Yet, the traditional cultural practices being shielded by NPS closures are, in fact, Indian spiritual or religious ceremonies, rites, and rituals. The fact that Indian religious systems are not strictly analogous to traditional Western religions does not render the traditional cultural practices bereft of spiritual or religious significance. Even the proponents of this approach must acknowledge that the traditional cultural practices at issue here are deeply spiritual or religious.

Some may argue that it is a part of the "secular" NPS mission to con-

serve "the cultural resource" of Indian spiritual or religious practices. But so broad a mantle over Indian religion smacks precisely of that kind of "excessive entanglement" that should set off the alarm bells of *Lemon*. A similar argument could be made that it is the mission of the NPS to conserve the cultural resource of Roman Catholic religious practice at the San Antonio Missions National Historic Park. Would the NPS deem it appropriate to close Pecos National Monument to all but Roman Catholics during the celebration of the Mass in the old church? Is the Mass of the Roman Catholic Church a "traditional cultural practice" rather than a "religious ritual?"

If the NPS, an agency of the United States government, possessed a "duty" to protect a "cultural resource" known as "religious practice," does that NPS duty also include the responsibility to insure the resource's orthodoxy, integrity, and authenticity? This is a truly frightful thought.

The First Amendment guarantees to Indians, as to all other Americans, a qualified protection of their "free exercise" rights. So too, the Establishment Clause also applies to dealings of federal land managers with Indian religious claims.

Special Legislative Provisions

Congress addressed Indian tribal claims for privacy of religious activities in the act establishing El Malpais National Monument and National Conservation Area in New Mexico. In Public Law 100-225, of December 31, 1987, Congress provided that: "the Secretary, upon the request of an appropriate Indian tribe, may from time to time temporarily close to general public use one or more specific portions of the monument or the conservation area in order to protect the privacy of religious activities in such areas by Indian people." (16 U.S.C. 460uu-47).[12]

Clearly conscious of the Establishment Clause implications of its language, Congress added the following: "Any such closure shall be made so as to affect the smallest practicable area for the minimum period necessary for such purposes." As if to highlight the extreme sensitivity involved with such closures, the law continues: "Not later than seven days after the initiation of any such closure, the Secretary shall provide written notification of such action to the Energy and Natural Resources Committee of the United States Senate and the Interior and Insular Affairs Committee of the House of Representatives."

Congress has enacted similar authority for the NPS to effect limited and temporary closures for Indian religious practices in P.L. 103-433, the California Desert Protection Act of 1994 (16 U.S.C. 410aaa-75). Congress has not provided the NPS the authority to make limited and temporary religious privacy closures except for El Malpais and the three parks of the California Desert.

The Department of Justice memorandum (referenced in endnote #9) seems to believe that such *congres-*

sional actions for temporary and limited closures might survive constitutional challenge. However, the June 1996 ruling in the Devils's Tower case may embolden a constitutional challenge to even these statutes that permit temporary closures. Perhaps authority for these closures may survive because they rest on law and not simply agency administrative action.

In any case, if the Indian religious closure provisions of the above laws were found to be constitutional, it would be imprudent for NPS managers to pursue Indian religious closures in parks where Congress did not provide for them. Such closures, such as the closure attempted at Devil's Tower, lack the most basic safeguards that Congress has imposed on federal agencies where Congress specifically authorizes such closures (for example: "smallest practicable area for the least amount of time"). The safeguard of committee oversight that Congress found imperative in El Malpais, where it authorized closures, was completely absent from the Devil's Tower Climbing Plan. It would be a peculiar outcome if an NPS-initiated religious closure should have to meet a less rigorous standard than a congressionally authorized closure.

The American Indian Religious Freedom Act (42 U.S.C. 1996)

Congress enacted the American Indian Religious Freedom Act (AIRFA) in 1978. The purpose of the law was "to insure that policies and procedures of various Federal agencies, as they may impact upon the exercise of traditional Indian religious practices, are brought into compliance with the constitutional injunction that Congress shall make no law abridging the free exercise of religion" (AIRFA Legislative History, House Report 95-1308).

AIRFA is an affirmation of American Indian First Amendment rights of worship. AIRFA does not establish the "free exercise" rights of Indians as absolute rights, exempt from any and all governmental burdens, direct or indirect. AIRFA does not confer more rights on Indian religions than are protected by the First Amendment. Consequently, when Navajo plaintiffs in *Badoni* raised AIRFA as a basis for modifying NPS management of Rainbow Bridge National Monument, the courts entirely dismissed the argument.

The Supreme Court in *Lyng v. Northwest Indian Cemetery Protective Association* (1988) rendered its most definitive position on the extent to which AIRFA countermands federal agency policies and actions. The court quoted AIRFA's author, Representative Morris Udall, who "emphasized that the bill would not 'confer special religious rights on Indians,' would 'not change any existing State or Federal law,' and in fact 'has no teeth in it.'" Thus, public use of public lands in a park, even lands deemed sacred to Indians, is not contravened by AIRFA.

NPS Management and Native American Relationships Policies

Closures of NPS lands to protect Indian traditional or religious activities directly conflict with NPS Man-

agement Policies on Native American Use (Chapter 8, pp. 8-9). These policies state that "performance of [Native American] traditional activities at a particular place will not be a reason for prohibiting the use of that area by others except where temporary closings are authorized in law...." We have seen that such temporary closings are authorized in the laws governing Death Valley National Park, El Malpais National Monument, Joshua Tree National Park, and Mojave National Preserve.

Closures of NPS lands to protect Indian traditional or religious activities also directly conflict with NPS Native American Relationships Policy, adopted by notice in the *Federal Register* on September 22, 1987 (52 FR 183). The NPS Native American Relationships Policy states (section III. B. 2) that "performance of a traditional ceremony or the conduct of a religious activity at a particular place shall not form the basis for prohibiting others from using such areas."

Summary

The National Park Service, like other federal land-management agencies, is constitutionally enjoined from taking actions that subsidize American Indian religion and create private religious preserves on federally owned public lands, *except* as law or treaty specifically provide.

Congress may, if it wishes, single out American Indian tribes for special treatment. Because of the unique legal position of the tribes in federal law pursuant to the treaty and trust relationship, special legislation that singles them out may not violate the Equal Protection or the Establishment Clauses of the Constitution.

An NPS manager should not ignore American Indian religious rights—or any First Amendment rights of religion, speech, or assembly. The NPS obligation to preserve the resources of the National Park System should not discourage us from accommodating, where possible, the religious practices of American Indians, or any other Americans. Thus, NPS managers must insure that Indian have nonexclusive access to their sacred sites for religious ceremonies. The NPS Native American Relationships Policy even provides that visits to parks for such purposes by Native Americans are exempt from camping or entrance fees. Such accommodation of religious practice is possible, but it must not go too far. The courts have told us that agency actions to establish private religious preserves for Indians on public lands go too far. The Devil's Tower decision is a fresh reaffirmation of that rule.

Endnotes

1. The Supreme Court decision in *Employment Division v. Smith* (1990) partially abandoned the 1963 *Sherbert* test by establishing a lower threshold of constitutionality for neutral laws of general applicability that incidently interfere with religious practice. Under *Smith*, a law need not serve a

"compelling state interest." Such a law must merely "advance a valid state purpose" to be constitutional.

Under *Smith*, only laws that were not neutral and that restrict practices "because of their religious motivation" need meet the strict "compelling state interest" test. Some justices of the Supreme Court, notably Justice David Souter, indicated discomfort with the low threshold established by *Smith*. Souter, in the 1993 case of *Church of the Lukumi* (see note #3 below), mused that a law which burdens one religion disproportionately must be held to a higher standard than just advancing a "valid state purpose" because such a law, though neutral on its face, may not be "substantively" neutral. However, Justice Souter's principle of "substantive neutrality" did not find a majority on the Court.

Justice Souter did not have to wait for a majority on the Supreme Court to revisit the threshold lowered in 1990 by *Smith*. Congress overturned the lower threshold in *Smith* and reinstated the *Sherbert* "compelling state interest" test even for neutral laws that indirectly burden religious exercise. Congress did so in Public Law 103-141, the Religious Freedom Restoration Act (42 U.S.C. 2000bb), on November 16, 1993.

2. Examples of governmental acts that violate Free Exercise because they compel believers to act contrary to their religion include: mandatory school attendance laws for Amish school children (*Wisconsin v. Yoder* 406 U.S. 205 {1972}), and a New Hampshire law compelling auto license plates to bear the slogan "Live Free or Die" *(Wooley v. Maynard* 430 U.S. 705 {1977}).

   An example of a governmental act that violates the Free Exercise Clause because it penalizes religious belief is the denial of unemployment benefits to a Seventh Day Adventist who refused to accept a job that required her to work on, and thus violate, her Sabbath (*Sherbert v. Verner* 874 U.S. 398 {1968}). For similar findings, see *Thomas v. Review Board, Indiana Employment Security Division* 450 U.S. 707 (1981), in which unemployment benefits were denied to an applicant whose religion forbade him to work fabricating weapons; and *Hobie v. Unemployment Appeals Commission of Florida* 480 U.S. 136 (1987).
3. A different standard applies when the state enacts laws that are neither neutral, nor of general application, but burden specific religious conduct. Justice Anthony Kennedy wrote in *Church of the Lukumi Babalu Aye v. City of Hialeah* (1993) that such laws must "undergo the most rigorous of scrutiny. To satisfy the commands of the First Amendment, a law restrictive of religious practice must advance 'interests of the highest order' and must be narrowly tailored in pursuit of those interests." This is not the test applicable to 36 CFR 2.1, which is neutral and generally applicable but whose effect indirectly burdens religious conduct. Congress may soon adopt a law that prohibits in the United States the ritual of female circumcision. Such a law would likely have to meet the test enunciated by Justice Kennedy.
4. Advocates on behalf of Indian religious practitioners have been quick to understand that the courts do not apply the "compelling interest" test in *Sherbert* to legitimate government management of federal lands, or public use of such lands. Since such actions neither compel nor prohibit Indian religious conduct, *Sherbert* does not apply. Thus, Jack Trope, in an article in *Cultural Survival Quarterly* (Winter 1996), specifically advocates that before the government takes an action that affects Indian sacred sites, the government "ought to be required to justify that the need for an activity is *compelling* and that there is no less intrusive manner to achieve that end..." (emphasis added). That, of course, is the *Sherbert* test. And Congress (or the courts) have not yet applied such a standard to Federal land management decisions.
5. See Memorandum of December 12, 1990 from Field Solicitor, NPS Southwest Region, to NPS Regional Director, Southwest Region.
6. The Supreme Court recently (June 28, 1994) decided a New York case *(Board of Education of Kiryas Joel v. Grumet)* that afforded an opportunity to overturn or refine the "Lemon test." Justice Antonin Scalia, in particular, is not fond of the test, describing it as a "ghoul in some late-night horror show that repeatedly sits up in its grave and shuffles abroad, after being repeatedly killed and buried..." (*Lamb's Chapel v. Center Moriches School District* {1993}). In a 6-3 decision with Chief Justice William Rehnquist and Justices Antonin Scalia and Clarence Thomas in the minority, the court essentially upheld the prongs of the Lemon test.
7. The Supreme Court's first mention of accommodation is in *Zorach v. Clausen*, 343 U.S. 306 {1952}). In that case, the Board of Education of the city of New York instituted a program, known as

"released time," during which students would be released from attending class in their public schools so that the students could attend religious instructions at their churches. This practice was especially crafted for the large Roman Catholic population of New York City whose church maintained a vigorous program of religious instruction for Catholic children in public schools. The court said: "When the state cooperates with religious authorities by adjusting the schedule of public events to sectarian needs, it follows the best of our traditions. For it then respects the religious nature of our people and *accommodates* the public service to their spiritual needs" (emphasis added).

8. Some other examples of governmental accommodation of religion that the courts have found constitutional: The National Prohibition Act of 1920 that forbid the manufacture, sale, or transportation of alcohol for beverage purposes but specifically exempted "wine for sacramental purposes"; and the Civil Rights Act of 1964, which exempts religious organizations from Title VII's prohibition on discrimination based upon religion *(Corporation of Presiding Bishops of Church of Jesus Christ of Latter-day Saints v. Amos* 483 U.S. 327 {1987}).
9. The Department of Justice made the same comments in a letter dated August 4, 1993, to the Chairman of the Senate Committee on Energy and Natural Resources, in connection with language for the proposed California Desert Protection Act.
10. *Otten v. Baltimore & O.R. Co.,* 205 F. 2d 58 (2d Cir, 1953).
11. In *Kiryas Joel,* the Court held that a 1989 act by the state of New York to establish a separate school district to accommodate the disabled children of a community of Hasidic Jews (the Satmars) violated the Establishment Clause. The state law conferred authority not on the religious leaders of the community, but on the citizens of the village united by a common Satmar tradition and culture, thereby hoping to avoid Establishment Clause challenge. Yet even that effort did not provide an adequate shield.
12. Congress has since enacted similar language for the Jemez National Recreation Area (administered by the Forest Service) in the state of New Mexico, created in 1993, and, as will be noted in the text, in the California Desert Protection Act (Section 705), enacted in 1994.

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Lawrence S. Hamilton

A Campaign for Cloud Forests:

Unique and Valuable Ecosystems at Risk

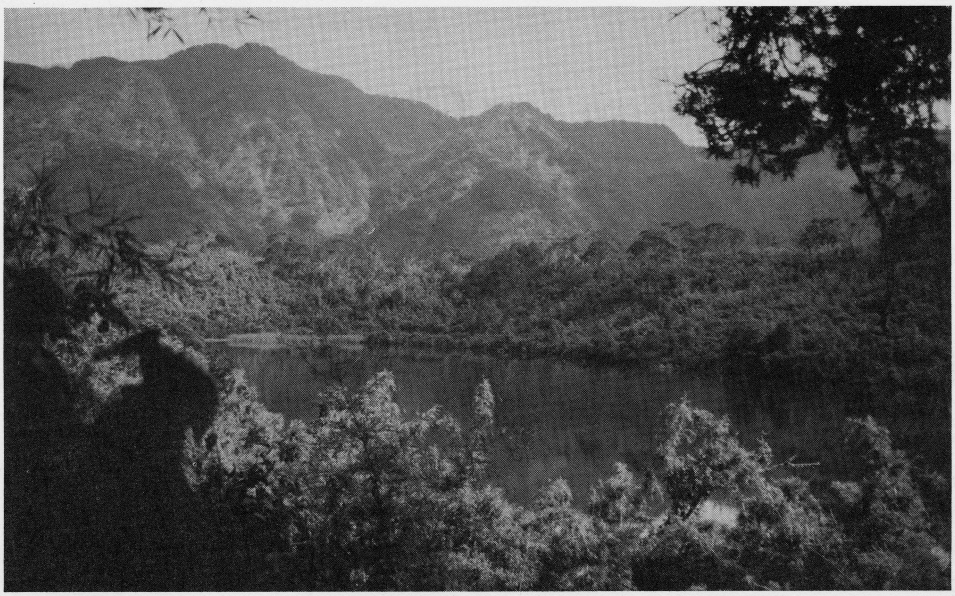
What and Where Are Cloud Forests?

Cloud forests are unique vegetation complexes that occur where there are persistent or frequent wind-driven clouds. From this moving cloud (or fog) they "strip" or harvest atmospheric moisture, this harvest being above and beyond the normal rainfall precipitation. This is "horizontal" precipitation (often called "occult" precipitation), and, in the absence of these intercepting surfaces of trees, shrubs, epiphytes, mosses and lichens, it is not harvested, and thus is a lost water resource. This situation is most common on mountains in the tropics and sub-tropics that are subject to oceanic influences. It occurs also where there are frequent coastal fogs (e.g., the coastal redwoods of California) or even with horizontal winter snow clouds on mountain tops in the temperate zone. It is the mountain cloud forests with which this article is concerned, for their biological, hydrological and heritage values are very high, and the rate of disappearance or degradation is most alarming. (See Hamilton *et al.* 1994.)

These mountain cloud forests are designated as special vegetation units in many languages, by such names as "nebelwald," "forêt néphéliphile," "bosque de ceja montaña," "elfin forest," "mossy forest," "matinha nebular," "unmu-rin," and many others (Stadtmüller 1987).

In comparison with lower-elevation moist forests, these forests usually exhibit reduced tree stature (hence another name, "dwarf cloud forest") and increased stem density. Canopy trees usually have gnarled trunks and branches, dense compact crowns, and small, thick, and hard (sclerophyll) leaves. A high proportion of the biomass may occur as lichens, mosses, briophytes, and filmy ferns. Tree ferns are commonly found in many cloud forests. Soils are wet, frequently waterlogged, and highly organic. The unusual physiognomic features have not been convincingly explained, but in many high-elevation forests, rapid fluctuations in radiation (including ultraviolet-B radiation), concentrations of polyphenols in foliage and fresh litter, excess water affecting root systems, and high winds seem to be part of the complex awaiting further study (Bruijnzeel and Proctor 1994).

Cloud forests occupy a relatively narrow altitudinal belt, but the position of the belt varies widely. For large inland mountain systems in the tropics (e.g., Andes, Ruwenzoris) they may typically be found between 2,000 and 3,500 m; whereas in



Africa's Ruwenzori Mountains contain biologically unique cloud forests. *IUCN photo by J. Thorsell.*

coastal and island mountains this zone may descend to 1,000 m (e.g. Hawai`i). On steep, small islands in very humid, equatorial conditions, a cloud forest may develop as low as 500 m, or in rare cases 350 m (Gau in Fiji). Cloud forests occur within a wide range of annual rainfall regimes (500–10,000 mm/year) and from year–round moisture to very seasonal. It is in these low- and seasonal-rainfall regimes that cloud forest stripping can provide the bulk of the water additions to the water budget of the area.

Maps showing the approximate locations of tropical montane rain forests (where the bulk of the cloud forests are found), as identified by the World Conservation Monitoring Centre, appear as Figures 1, 2, and 3. The original extent of cloud forests in the early 1970s was thought to be 50 million hectares. Much less than this remains today, even though they are not very hospitable environments for human occupation, and they are about as remote as forests can be.

The Value of These Mountain Eyebrows

Hydrological importance. Mountain forests in general because of their location in the headwaters of streams and rivers have a high value as watershed protection. Conversion of these forests to other uses almost invariably adversely affects water quality, and may cause undesirable changes in flow regime. Mountain cloud forests have value above and beyond this because of their function in capturing

Fig 1

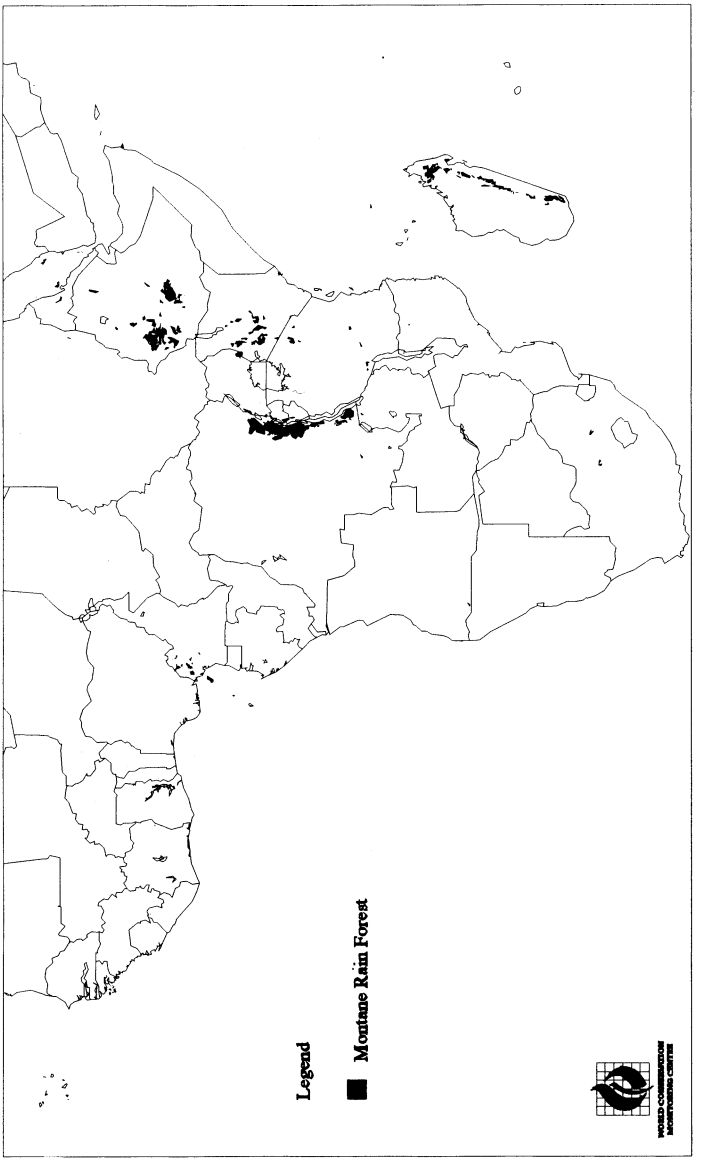


Figure 1. Tropical montane rain forest in Sub-Saharan Africa.

Fig 2

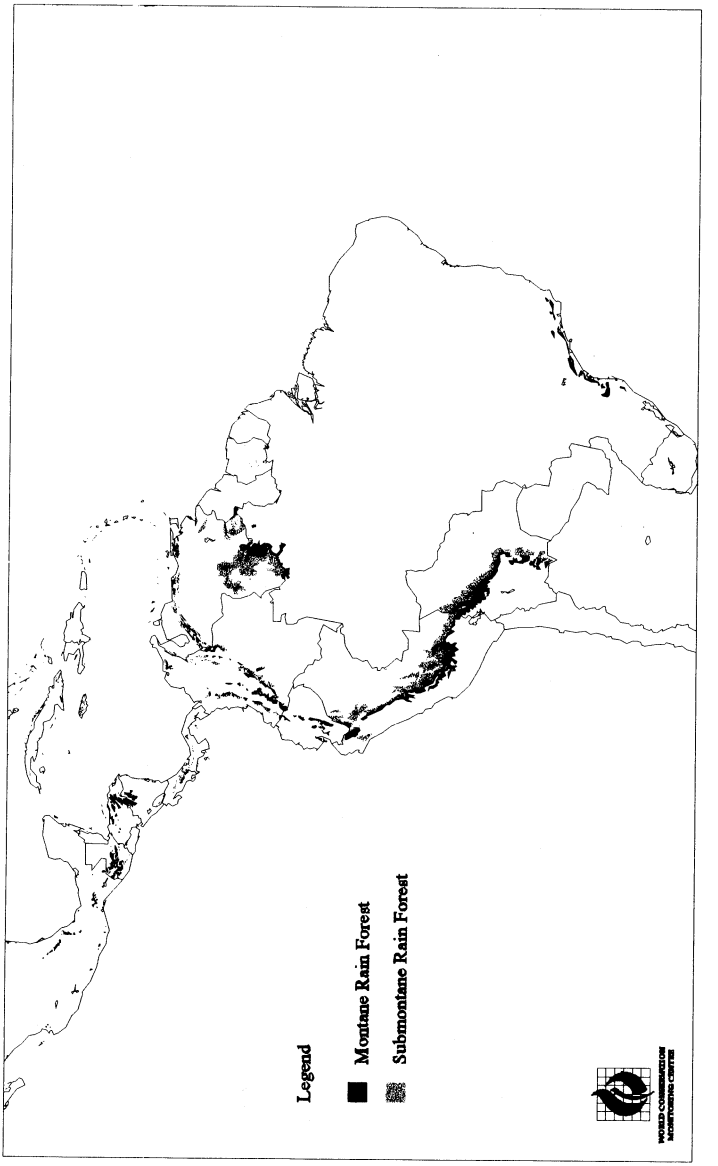


Figure 2. Tropical montane and submontane rain forest in Latin America.

Fig 3

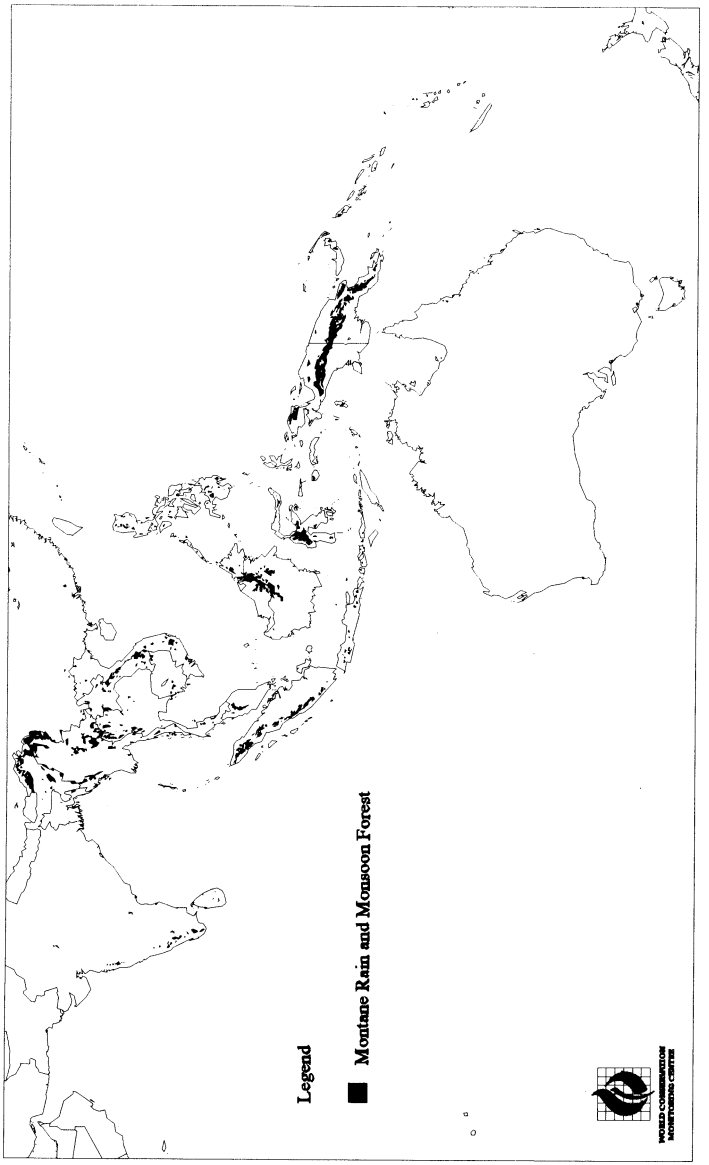


Figure 3. Tropical montane rain and monsoon forest in Southeast Asia.

atmospheric moisture beyond normal rainfall. Horizontal precipitation capture may reach hundreds of millimeters per year. Typical values range between 5 and 20 percent of ordinary rainfall, but might be much higher if there is a rainfall dry season, but one which still has cloud moving through vegetation (for example where there are afternoon inversion layers in trade wind belts). Moreover, these usually stunted forests with thick leaves have low rates of water use, even during periods of bright sunshine. When cloud forests are removed, the mass of moisture-intercepting leaf surfaces and abundant epiphyte biomass on branches and stems are lost. Thus, occult precipitation is consequently also lost or at least greatly reduced. Moreover, if the forest is cleared for grazing (one of the most common impactors) a deterioration of infiltration characteristics can further degrade the flow regime from the ecosystem. In areas of low rainfall but intercepted cloud, even single trees can be important sources of water for wildlife, domestic stock or people. One such tree in the Canary Islands had such value and veneration to the residents of El Hierro that this "fountain tree" appears on a coat of arms (Gioda et al. 1994). In the arid coastal areas of Perú and Chile where there are few or no trees, artificial towers of screens are constructed on high terrain where clouds may be intercepted. These collectors supply substantial communities with their domestic water requirements. Where trees will grow, reforestation can restore this valuable hydrologic function in cloud areas.

Biodiversity importance. It is generally assumed that mountain cloud forests are not as species-rich as their tropical or temperate rain forest counterparts. There is a generally accepted relationship that the number of tree species and lianas decreases with increasing altitude in the tropics. However, there is substantial evidence that the number of species of epiphytes, shrubs, herbs, and ferns increases with altitude in the humid tropics, so that total flora diversity does not compare unfavorably with lowland tropical rain forest. For cloud forests in strongly seasonal to even semi-arid environments, the biodiversity is surely greater than in the adjacent ecosystems. Moreover, many of these "eyebrow forests" (cejas de montaña) are given this name because they are the last remnant of native vegetation on heavily-used and often abused mountains. Biodiversity values in terms of native species, gene pools, and ecosystems are in these cases supremely high. But whether isolated or simply an altitudinal ecosystem belt abutting other forest, there is no denying the relatively high number of plant and animal *endemics*, sometimes confined to one cloud forest on a single "island" mountain. A recent BirdLife Biodiversity Project report on tropical montane cloud forests shows their great importance to restricted-range and threatened bird species, especially in the Andes (Long 1994). The resplendent quetzal *(Pharomachrus*

mocinno) of Central American is now virtually restricted to a few cloud forest "islands" of separate mountains. Charismatic megafauna of some fame, such as the mountain gorilla *(Gorilla gorilla beringei)* of Central East Africa and the spectacled bear *(Tremarctos ornatus)* of the Andes, are specific to cloud forest environments. The former is a major national income earner through nature tourism, in at least one country (Rwanda).

Losses and Erosion of Values

It is widely reported that these valuable mountain forests are being cleared or degraded at an unprecedented rate. Bad news about losses came from Central America and the Caribbean as long ago as the late 1970s (LaBastille and Pool 1978), and a system of cloud forest parks or reserves was called for. Today the news is even more serious. It is thought that they are being destroyed at a rate exceeding that of their more well-publicized cousins the tropical lowland rain forests. The latest data from the UN Food and Agriculture Organization study indicates that, whereas the tropical forest biome as a whole disappeared between 1981 and 1990 at a rate of 0.8 percent per year, loss of tropical mountain and upland forest was 1.1 percent per year (FAO 1993). Land hunger is pushing agriculture and occupation higher up Africa's mountains. The growing of temperate vegetables in tropical uplands, and the siting of resorts and golf courses in the cool uplands, are new threats to many of Southeast Asia's cloud forests. There are estimates from neotropical botanists that almost 90 percent of the cloud forests have been lost from the northern Andes, largely due to the extension of grazing into these high forests from both above and below. Worldwide, many are being degraded of their biodiversity and endemism by unsustainable fuelwood and charcoal wood cutting, and by uncontrolled extraction of the unusual plant and animal life of the cloud forests. High-value commercial trade has developed for orchids, bromeliads, birds, amphibians, and medicinals, including rare or endangered species.

These forests, because they are "washed" in frequent cloud, are particularly susceptible to damage from atmospheric pollution. The temperate cloud forests of the industrialized world have well illustrated this great threat through the widespread decline and death of these forests due to acid precipitation. Someone has given the name "Metallic Mountain" to Mount Mitchell, the tallest peak in the Eastern United States (elevation 2,037 m), due to the build-up of aluminum, cadmium, lead, zinc, and mercury in its cloud-washed spruce-fir forest. Cloud forests of the tropics, though not yet so dramatically affected, are nonetheless not immune to cloud-borne pollutants from their increasing urban and industrial concentrations of atmospheric emissions. Cloud forests also are particularly vulnerable to climate change since

these relatively narrow altitudinal belts of unusual vegetation are so specifically climate-determined. Moreover, clearing of forests in the lowlands may raise the cloud condensation elevation, and so deprive cloud forests of some of their occult precipitation.

Suggestions for Damage Control

The underlying causes of the adverse impacts on cloud forests relate to such basic, pervasive pressures as rapid population increase, inequity in access to the earth's resources, demand for increasing per capita levels of consumption, uncertainty of land tenure, greed, political expediency, and transboundary air pollution. These pressures are very complex and difficult to deflate, whether by a land manager, administering agency, or national government wishing to protect or manage better a cloud forest area or set of areas. Moreover, there is the distinct possibility of climate warming due to increasing atmospheric greenhouse gases and ozone-depleting emissions. Reducing greenhouse gas and ozone-depleting emissions requires international action, which seems to be coming into effect but at a snail's pace. A single country or a land management unit is unable to cope with this mega-problem.

What actions can be taken at an operational level by a nation, a resource management agency or at a local cloud forest management level?

First and foremost is the *raising of awareness of the values of cloud forests.* This needs to be carried out not only at all levels from local to international, but with the many actors who directly impact them or who derive benefit from them. Of particular import here are water-dependent communities as well as the local graziers, fuelwood cutters, and plant and animal collectors. Development aid donors have rarely heard of cloud forests and have their sights focused on biodiversity conservation in the lowland rain forests. An international "Cloud Forest Campaign" might do much to educate this latter community. Local, national, or international non-governmental organizations (NGOs) may be effective in awareness-raising at all levels, if given reliable information by the scientific community. Cloud forests will not be conserved until people know what values are being lost, and this requires education.

In the second place, the high hydrological and biological values of these ecosystems warrant that most, if not all, of those remaining be given some type of *protected area status.* Several options are available under the categories system recognized by IUCN-The World Conservation Union, such as: national park, strict nature reserve, habitat management area, managed resource protected area, or protected landscape. While formal designation of a protected area does not guarantee protection, it is the first step. There is considerable urgency in this action for all countries having cloud forests. The World Conservation Monitoring Centre is

seeking funds to prepare a Cloud Forest Atlas that would greatly help us to see the status of these ecosystems, and it would indicate where are the gaps in a protected area system.

Whatever the land ownership (state, communal or private), the most important part of a protected area designation is the *control over use* so that there is no serious nor irreversible degradation. This, after all, is what protection or sustainable use means. Controls over extraction, conversion, intensity of use (as in tourism), roads and trails, and introduction of alien species, are all necessary elements. *Management plans*, made with local community input and support, and then effectively implemented, are important elements of control in meeting the threats. Educational programs with local communities must precede the planning and adoption of management policies. Much valuable knowledge may be obtained from traditional resource users in this process. Surveys and inventories need to extend beyond the boundaries of the cloud forest and include not only biophysical information about land use, but tenurial and demographic data.

Provisions for *monitoring the state of the ecosystem* need to be incorporated, for these are "stressed," slow-to-recover systems. Measures of change should be made not only for local impactors, but cloud forests are good "miners' canaries" for monitoring global changes in weather, air quality, ozone levels, and ultraviolet radiation.

Mountain cloud forests have experienced little research and even less *long- term research* when compared with almost all other major forest ecosystems. Perhaps this is due to their relative inaccessibility and their rather inhospitable environment for research. There has been absolutely no integrated research involving scientists from different disciplines working on the principal ecosystem processes and elements. At the very least, integrated studies involving hydrology, meteorology, soils, vegetation, fauna, and nutrient cycling need to be commenced as soon as possible. Probably the Monteverde Cloud Forest Reserve in Costa Rica, Bwindi Impenetrable National Park in Uganda, the Blue Mountains in Jamaica and the Luquillo National Forest in Puerto Rico come the closest to having research which approaches this criterion. Sites where benchmark data are being collected on many elements offer exceptional opportunities for a global monitoring network with respect to the close-to-surface atmospheric changes.

But there is also a need for *applied research* to answer pressing management needs. This includes determining sustainable levels (if any) of resource harvesting (especially for nonwood products). It should cover the socio-economic factors that increase the chance of buffer zones protecting these increasingly rare fragments, and the putting of a price tag on the water harvest of these forests or on the water loss when they are destroyed.

A worldwide *inventory and mapping* of these forests, and the development of a data base for them is a matter of high priority. The World Conservation Monitoring Centre working with IUCN, could well carry out this task, given financial support.

Irreversibility

Donor assistance for this research agenda, and for all of the other measures for damage control, is an urgent need. In many ecosystems, the consequences of many land-use decisions are somewhat reversible, given sufficient time and inputs of energy. While much more research is needed to increase our knowledge about mountain cloud forests, the current consensus is that consequences of activities which remove cloud forest cover are usually irreversible. This is because of the high endemism, unique gene pools, small size of the areas ("eyebrows" of the higher mountains or "caps" on the lower mountain summits), and slow recovery of these "stressed" systems. It is true that one of the important values—namely, the occult water capture function—can be restored without great difficulty. Reforestation, or even erecting large screen structures (as is done for water supply in the arid fog belt of Perú and Chile) can provide the necessary surfaces for cloud stripping. But restoration of the complex mix of life forms, including the amazing epiphyte community and the unusual fauna, of the recreation value, of the authenticity, of the scientific and genetic information, is beyond our capability.

How much better to protect these ecosystems from destruction, since the uses that replace cloud forests are economically marginal at best. Perhaps only the use of these sites (where they are at the summit), for communication facilities can claim a higher economic use. Even in these cases, it is surely often possible to find alternative locations for this infrastructure. An awareness-raising about mountain cloud forests is a matter of some urgency. IUCN could be uniquely well placed, using the strength and support of its membership, to provide leadership in a campaign to maintain cloud forests, given the necessary resources to do the job.

[Ed. note: This article was originally published as part of the IUCN Focus Series in 1995, and is used here with permission.]

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Parks for People:

A Case Study from the Aïr Mountains of Niger

Introduction

The Republic of Niger is a vast, land-locked Sahelian nation with a population of over 7 million inhabitants. For the majority of these people life depends on the country's limited natural resources: soil, surface or shallow water tables, pasture, and a variety of forest products, including timber for fuel and construction. Agriculture is predominantly seasonal and herding extensive, with both taking place under a climatic regime that heavily underlines their subsistence nature. Whilst socially and economically the only realistic options available for the time being, these activities are not only prone to the effects of drought, poor land use and desertification, but also contribute to their propagation.

The Aïr Mountains are situated in north-central Niger and cover some 125,000 sq km of arid terrain, ranging from granitic and volcanic peaks up to 2,000 m, through stony plateaux, and into the sandy, desert country of the Sahara. Drainage features are prominent within the landscape, and, with their relatively dense vegetation, contrast starkly with the largely abiotic surroundings.

The climate of the Aïr is hot and extremely arid with temperatures ranging from just below freezing in January to around 50 degrees C in May and June. The average annual temperature is about 28 degrees C. Lying as it does at the northernmost reaches of the Inter-tropical Convergence Zone, rainfall is both sparse and seasonal in occurrence. Furthermore, its distribution—and therefore that of any resultant pasture—is totally unpredictable. Rainfall varies from between 10-125 mm annually, depending on the locality. As an indication of aridity and water deficit, measured evaporation is on the order of 3,000-4,000 mm annually. Perhaps more important than rainfall is the concentrating effect of the drainage patterns on the large volumes of water that run off the rocky slopes and mountain sides after even the briefest of showers. As a consequence, the vegetation of the larger wadis [dry watercourses] is more typical of areas benefiting from higher rainfall (de Miré and Gillet, 1956).

Because of its location, bridging the Sahara and the Sahel, and mountainous nature, the Aïr is both topographically and biologically more diverse than the lowland, desert, and sub-desert habitats surrounding it. As a result, the Aïr has consistently attracted the attention of travellers and

scientists. The technical notes made by Barth during his travels in the region in 1850 (Barth, 1857-8) have been supplemented by the writings and collections of a number of authors, including Foureau (1902), Buchanan (1921), Rodd (1926), Chopard and Villiers (1950), Lhote (1961), Fairon (1975), Peyre de Fabregues and Lebrun (1976), and Morel (1985).

Since 1979, the biology of the Aïr has come under the close scrutiny of both the World Wide Fund for Nature (WWF) and the World Conservation Union (IUCN). Attracted by the area's relatively unspoilt nature, and more specifically by the need to protect some of the last remaining populations of addax (*Addax nasomaculatus*), ostrich (*Struthio camelus*), and dama gazelle (*Gazella dama*) in West Africa, scientists have added considerably to knowledge on this unique area's fauna and flora (Newby and Jones, 1980; Dulieu, 1981; Grettenberger, Newby, and Monson, 1984; Monson, 1985; Grettenberger and Newby, 1986; J. Watkins, 1986; L. Watkins, 1986; Grettenberger, 1987; Newby, Grettenberger and Watkins, 1987; Magin, in prep.).

To date, some 40 species of mammal, 160 of bird and 350 of plant have been identified. Besides rare mammals, like the addax, cheetah (*Acinonyx jubatus*), and slender-horned gazelle (*Gazella leptoceros*), the Aïr harbours small populations of the wild relatives of several crops: olive (*Olea lapperinei*), millet (*Pennisetum glaucum*), and sorghum (*Sorgho aethiopicum*) (Newby, 1986; Ingram, 1990).

Archeological research has shown that the Aïr and Ténéré have been occupied for at least 30,000 years (Durand et al., 1983; Roset, 1989). The area is rich in stone-age sites, many of them internationally important (Adrar Bous, Iwelene, Areschima). The existence of numerous ruined settlements, abandoned over the past 200 years, testifies to a sizeable sedentary population in the recent past. Historical records (Barth, 1857-8; Lhote, 1976) indicate the existence of an important trans-Saharan trade route through the Aïr Mountains. Whilst undoubtedly suffering the effects of the opening up of coastal trade routes, the population of the Aïr was also influenced by a number of other factors that include colonisation, tribal warfare, drought, and disease (Fugelstad, 1983). French colonisation of the Aïr began in 1898, but it was not until the 1920s that the region was completely 'pacified'. The period from 1910 to 1920 was particularly disruptive, including not only a severe drought and epidemic of influenza, but also a civil uprising that was severely quashed by the French (Salifou, 1973).

These events appear to have had serious implications for the indigenous systems of conservation and management of the Aïr's pastoral resources. Tribal ownership of the land was irrevocably disrupted by the mass exodus and weakening of formerly powerful groups. With them went the

traditional mechanisms and checks that had insured a certain degree of rational land use.

The Situation Today

Today, some 5,000 Twaregs inhabit the northern Aïr, half of them living in and around the villages of Iferouane and Tin Telloust. Like their forebears, their livelihoods depend for the most part on the cultivation of small plots of land irrigated by animal traction from shallow wells. A variety of cereals and vegetables are grown, including wheat, maize, tomatoes, peppers, and onions (Hammer, 1990). The remainder of the population raises small herds of goats, sheep, and camels. Unlike the plains-dwelling nomads of the Sahel, the herders of the Aïr practice a transhumant form of husbandry, frequenting the wooded valleys during the dry season and the lower, fringing plains during the rains (Hagener, 1990).

Although a shadow of its former self, the caravan trade still contributes to the local economy, providing an outlet for garden produce and a means of procuring cereals from the grain-producing regions of southern Niger (Bernus and Bernus, 1973). Unfortunately, the caravan trade has been hit in recent times by the effects of drought on the pack camels and by competition from motorised transport. Whereas the caravan trade used to function on a mutually acceptable and interdependent system of barter (garden produce and meat for salt and dates; salt and dates for cereals and other necessities), modern commerce has introduced a monetary dimension that favours few but the rich, truck-owning merchants.

Considering the Aïr's environment and ecology, the land use currently practised would seem not only the most appropriate but also by and large the most sustainable. Whether due to its isolation, the sparsity of its resources, or the rigours of its climate, there appears to exist a rude but effective balance between the Aïr's relatively small human population and its natural resources. The fact that wildlife and stands of healthy trees can still be seen bears witness to this. During times of plenty, the people are able to satisfy their basic needs without endangering the survival or perennity of the resources they rely upon. In periods of drought, however, the demand on the limited supplies of water and vegetation increases and, if prolonged, leads to crop failure, widespread overgrazing, loss of livestock, mass exodus of the human population, and, not infrequently, death from disease or starvation. Although the well-adapted, aridland ecosystems of the Aïr exhibit a high degree of resilience to drought, natural regeneration may take several years, even in the absence of continued use. Inevitably, habitats rarely fully recover from prolonged drought, and although rehabilitation is theoretically possible, it seldom occurs without considerable external assistance (reseeding, afforestation, watershed management).

If left 'untouched' by the outside world, the Twareg of the Aïr might

well manage to remain in balance with their environment for some time to come. Although the fluctuations in the brutal equilibrium they do maintain may be ecologically 'acceptable', it is not so ethically or politically. In spite of its capacity to cope with the rigours of survival in a marginal environment, the nomadic tradition is hard pressed to keep up with the political and climatic changes that have effected the Twareg and their social fabric during the 20th century.

In the absence of viable alternatives, the future of the Aïr Twareg would seem tied to their ability to pursue traditional, natural resource-based occupations whilst exploiting any other appropriate opportunities that arise. The latter already include employment in the nearby mining towns, temporary emigration towards the labour markets of North Africa, and the expanding tourist industry. In short, the survival of the Aïr Twareg is dependent on their maintaining as broad-based a socioeconomic strategy as possible.

Protected Areas and Development

In West Africa at least, it is clear that protected areas are rapidly becoming the only places where a semblance of former ecology and biological diversity persists. Besides their intrinsic cultural or scientific values, these parks and reserves are often critical for the maintenance of life-support systems such as watersheds and fisheries.

Much as parks and reserves are highly important tools for the conservation of nature, the protected areas concept needs to be adapted and applied more widely to the management of the less exotic but equally important utilitarian resources such as land, soil, pasture, and water. While change is on its way in the form of Biosphere Reserves, progress is still hampered by the misconception that parks and reserves should, almost by definition, be 'no go' wildlife areas, where the human being is seen more as an inconvenience than an integral part of the ecosystem. While there will always be a need for traditional parks and reserves to conserve and protect representative or spectacular parts of the planet, much greater areas of land need to come under rational management or suffer the consequences. This is particularly true of the Sahel, where large tracts are already severely degraded. Without some kind of management structure, the widespread nature of environmental misuse and degradation can hardly be tackled in a radical enough way to prevent natural resources falling below a point of no recovery, or beyond the threshold at which they can no longer sustain humans and their use of them. Having said this, however, it is important to realise that although most Sahelians do appreciate the consequences and the 'follies' of overgrazing, inappropriate, agriculture and soaring fuelwood consumption, there is precious little they can do about it in the absence of socially, politically, and economically acceptable alternatives. In theory at least, the protected areas

approach of identifying conservation or land use problems in a well-defined area, and then tailoring legislation and management to deal with them, would seem a good way of tackling those problems in accordance with local needs and conditions.

The Aïr And Ténéré National Nature Reserve

When the establishment of a protected area for the Aïr was first proposed in 1982 (Newby, 1982), the initiative was primarily motivated by concern for the region's increasingly unique and threatened fauna and flora. Wildlife was under pressure from uncontrolled hunting and tourist harassment, and, after several years of drought, woody vegetation was being rapidly destroyed by overuse and abusive cutting. By the time a reserve was finally gazetted in January 1988, its vocation and objectives had evolved considerably to take into full account the human dimension to the area's ecology. With an area of just over 77,000 sq km, the Aïr and Ténéré National Nature Reserve is one of the largest protected areas in the world (about twice the size of Switzerland). It is managed by the Nigerien wildlife service and boasts a staff of over 40 people, ranging from foresters and wildlife experts to guides, nurserymen, and extension agents. Funding of the Reserve's conservation and development activities is assured by a consortium of donors that include WWF, IUCN, the Swiss and Danish governments, and Band Aid.

Without neglecting the Reserve's unique role as a refuge for endangered fauna and flora, work is being increasingly geared to addressing the vital problems of natural resource use, management and planning. While it is clear that the peoples' impact on the environment often calls for conservation measures to be taken, it is equally as clear that conservation goals will not be met without their support. This implies more than a purely sectorial approach to the problem and, in the case of the Aïr project, has led to the execution of a large number of accompanying rural development activities, ranging from well digging and health training to adult literacy and woodless, adobe construction (Newby, 1989).

The Reserve not only provides a physical, administrative, and legislative framework for natural resource management, but is also a focal point both locally and nationally for pride and involvement. The Reserve and the IUCN/WWF project that supports it are generally perceived as an innovative attempt to reconcile conservation with development through a broad-based programme geared to the protection, restoration, and sustainable use of the area's natural resources. Because of its breath-taking desert scenery, its cultural and prehistoric sites, and its unique wildlife, the Reserve is becoming a popular tourist venue, and as such is contributing to the limited development possibilities otherwise available. Unlike agriculture or stock rearing, tourism and the

economy derived from it are largely sheltered from the vagaries and perturbations of the climate. With this in mind, an information centre has been built, incorporating educational displays, a local guide service for trekking, and a crafts shop.

Site-Specific Rules and Regulations

Establishment of the Reserve has enabled legislation to be tailored specifically to the area's needs and potential. Unlike national law regulating natural resource use and abuse, which tends to be either too general, out of date or inappropriate for real management purposes, the Reserve's regulations are site-specific and as a result entirely relevant.

Although some authors (Bourgeot, 1988) have argued that the establishment of the Reserve has had a detrimental effect by depriving people of access to resources or land previously available, there is on the whole no evidence of this. In fact, many people living outside the Reserve have asked that its boundaries be extended to encompass their own land. Without the Reserve's regulations and, more importantly, management capacity, adjacent land is being plundered to satisfy the ever-increasing fuel-wood needs of nearby towns.

To a large extent the legislation covering the Reserve reiterates, albeit in a site-specific way, national law and has brought with it no fundamental changes and restrictions to the people's way of life. Although access is prohibited to some 12% of the Reserve's desert centre (an IUCN Category I wildlife sanctuary), the land in question was very rarely used by the local population.

The same is true of bush meat and a ban on hunting. In days gone by, the people used to hunt for food and for meat for the caravan trade (Lhote, 1951), but this is rarely done today: wildlife is too rare and inaccessible to render it profitable. In fact the general attitude to wildlife is one of benevolence, the Twareg often stressing its cultural and aesthetic values. As might be expected of a people almost wholly reliant on natural resources for its existence, perception of environmental health is acute and wildlife is seen as both an indicator and a product of environmental well-being. If wildlife populations are under threat today, it is not from the Twareg but from drought, desertification, harassment from tourists, and, above all, hunting by the armed forces.

National restrictions on the use of certain species of tree have been enforced, affecting to a certain extent the livelihoods of the local artisans that produce household objects such as mortars, spoons, saddles, etc. In this case, compensatory action is being taken through the importation of mortars and it is hoped to establish a commercial network with the artisans affected. Whatever the resource, the ultimate aim is to permit use within sustainable limits. In the absence of data to define these limits, however, the approach is one of measured caution. Over the next 3 years, ecological and socio-economic research is to be

undertaken to better understand and define both the potential and the constraints on natural resource use.

Predator control is perhaps the major bone of contention between the Reserve's authorities and the local population. Although the law specifically forbids it, the use of poisons such as strychnine to control jackals (*Canis aureus*) and hyaenas (*Hyaena hyaena*) is generally condoned by local administrators. The Reserve's managers recognise that livestock predation is a problem but can hardly be expected to accept the use of such environmentally dangerous poisons. Local use of strychnine has in the past killed non-target species like crows, ravens, and vultures, and beneficial carnivores like the fennec (*Fennecus zerda*) and Rüppell's fox (*Vulpes rüppelli*). In an attempt to solve this particularly thorny issue, a compromise is being looked for that might entail granting the people living in high-risk areas periodic dispensation to use traditional methods of control (destruction of breeding dens, foot-traps). Experiments will also be carried out using live-traps and non-lethal, leg-hold traps.

Although it is clearly impossible to please all of the people all of the time, it is fair to say that the positive aspects of the Reserve's creation by far outweigh the disadvantages. Results to date have been encouraging and, in spite of the fact that habitat rehabilitation takes a long time in drought-prone aridlands, improvements are already discernible. More importantly, these have been noticed by the local population and have heightened their appreciation of the Reserve's value. Wildlife is more abundant and forest resources, after years of drought and overuse, are recuperating. The acid test will come when the next drought hits the area and it is possible to monitor the results of better range conditions and, hopefully, management practices on the local population's ability to support its effects.

Local Participation and Responsibility

Ultimately, the aim is to transfer as much responsibility as possible for the Reserve's management, law enforcement, and surveillance from the largely 'alien' government staff to the land users themselves (DFPP, 1990). To facilitate this, a network of voluntary Representatives, composed of locally respected farmers and herders, has been set up. The Representatives form the vital link between the Reserve's managers and the people. Together with locally recruited extension agents, the Representatives are essential for developing the understanding and consent required to undertake not only wildlife protection and habitat rehabilitation, but also experiments to identify and demonstrate alternative forms of land and natural resource use.

Politics and practice apart, the development of a truly popular and participatory approach is by no means easy considering the immensity of the Reserve and the highly uneven distribution of its population.

The issue is further compounded by the prickly question of common resource management, where land use may at best be only temporary. Until real ownership of resources such as wildlife, pasture or water can be established, responsibilisation is an extremely tenuous concept. Traditional ownership or rights to land and resources have been totally deformed by the political, social, and climatic changes of the past century, and it is only now that Niger is tackling the problem through the development of a Rural Code.

The project's rural development and land rehabilitation activities do benefit from a high degree of local participation, but this has invariably been developed on an employer-employee basis. On the whole it has been found difficult to mobilise true participation. The reasons for this are several-fold: lack of conviction, fatalism, precedents set by other projects, politics, etc. Project 'philosophy' is based on the premise that popular support and voluntary participation can only come about through greater responsibilisation and conviction in what one is doing. Its approach is to try and produce tangible evidence for the application of such and such an activity or measure; as a result, emphasis is put on experimentation with the risks and costs being borne mainly by the project. Clearly, unless the people perceive real benefits for the use of their time and energy, they will not voluntarily undertake new or extra activities. Having said this, the project has nonetheless made considerable progress in several fields, including well construction, woodless home building, flood protection for gardens, and solar drying of vegetables. In all these cases emphasis has been placed firmly on the dual aspects of demonstration and training.

Discussion and Conclusions

Given the fact that the conservation of natural resources and the modification of traditional land-use practices are both long-term undertakings, the results so far are encouraging. It is fair to say that the Aïr Mountains experience has to date confirmed the role that appropriately designed and run protected areas can play in natural resource management and, by extension, sustainable rural development. What guarantees are there, however, that the short-term gains and benefits made possible by the Reserve's presence can be sustained, or that the resources eventually restored will be used correctly? In theory at least, the solution lies in effective management. In reality, however, management is unlikely to work unless enjoying popular support, and as such needs to be totally realistic.

As we near the end of the 20th century, the Twareg of the Aïr can look back on a time that has seen the world around them change enormously. For many, though, life goes on much as before, tied inextricably to nature and the natural world, to the coming and going of the seasons, to the good years and to the bad. Existence in the Aïr is harsh, but by and

large its nature remains bountiful. There are gazelles, Barbary sheep and ostriches, deep waterholes in the mountains, and well-wooded valleys. Protected areas can help maintain and improve this desirable situation.

In other parts of the Sahel, however, the land can no longer sustain the peoples' modest needs: pastures are overgrazed, soils are eroded, wildlife has disappeared. More and more people are obliged to compete for diminishing returns and, be it their fault or not, the fact remains the same: human beings no longer live in harmony with the resources they require for their subsistence. Seemingly bereft of viable alternatives, people are obliged to go deeper and deeper into environmental debt until the inevitable happens and the land is destroyed or can no longer support even sub-subsistence requirements. It is difficult to see how the Sahel and its natural resources can be restored, nurtured, and coaxed back into providing sustenance to growing populations. Here again, protected areas offer considerable potential for innovative management and habitat rehabilitation.

In a rapidly changing world, protected areas must also change to meet the demands of new situations. It is no longer reasonable to 'set aside' large tracts of Africa for the unique benefit of wildlife or privileged visitors. It is equally as unwise to throw the baby out with the bathwater and reject the whole concept of protected areas because some parks and reserves are no longer appropriate. On the contrary, the protected areas approach to sustainable development, through the conservation and management of land and natural resources, is more urgently needed than ever before.

[Ed. note: This article originally appeared, in slightly different form, in *Oryx* (26:1, January 1992), and is used here with permission.]

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Corridors in a Regional Conservation Plan

A Commentary on the Use of Corridors Using the Greater Georgian Bay Ecosystem as a Model

Introduction

National parks and other agencies concerned with the protection and preservation of natural spaces are realizing that management of these areas must occur on a scale far greater than that delineated by their boundaries. This move towards management on a landscape scale has led to cooperative initiatives that integrate protected areas into a regional ecosystem. Ecological connections that allow for animal movement between these protected areas has been viewed as crucial to the development of a regional ecosystem management framework. Georgian Bay Islands National Park, in south-central Ontario, has created a vision for such a regional ecosystem management plan. The vision includes an inventory of all core areas within the region as well as a proposed corridor system linking these core areas. Before implementation and designation take place, it is necessary to examine why corridors are deemed to be essential for ecosystem management, the predicted success of the proposed corridor plan in facilitating mammal movement, and some of the potential mechanisms for integrating corridors into a landscape management plan. In the case presented here, the extreme heterogeneity between the northern and southern halves of the ecosystem suggest that management strategies specific to the needs of the two areas should be incorporated.

In February 1994, Georgian Bay Islands National Park established the Greater Georgian Bay Ecosystem Initiative, under a Parks Canada directive (Department of Canadian Heritage 1994), in an attempt to introduce protection strategies in areas outside the park boundary. A key aspect of this regional protection strategy involved the establishment of connections between habitat patches to allow for species movement and thereby prevent their loss (Noss and Harris 1986). Focusing on an area along approximately 80 km of coast in the southeastern Georgian Bay area to a distance of 40 km inland (Figure 1), the initiative involves various planning and protection agencies in the region. The Greater Georgian Bay Ecosystem is composed of two distinct ecological subregions. The southern part of the area lies within the Great Lakes–St.

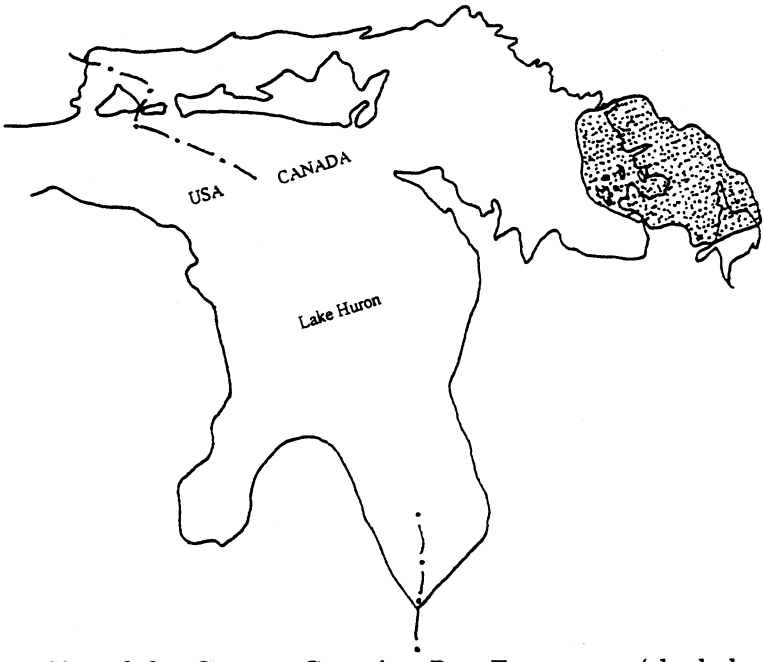

Figure 1. Site of the Greater Georgian Bay Ecosystem (shaded area) in Southern Ontario.

Lawrence lowlands physiogeographic region and is characterized by limestone bedrock with field and deciduous forest vegetation. Much of this area is given over to agricultural development. The northern half of the ecosystem is composed of the southern extremity of the Canadian Shield and consists of numerous glacial lakes, bogs, and wetlands as well as tracts of mixed forest. Large parts of this area are owned by the Crown. Finally, the coastline of the ecosystem, although typical Canadian Shield landscape, can be considered distinct as an island archipelago. For the purposes of this discussion, the archipelago will be considered to be a part of the northern half of the ecosystem. Both the Canadian Shield and the island archipelago are heavily used for recreation purposes, and contain many seasonal cottage residences.

Organization of the Ecosystem Initiative Working Group

Similar to ecosystem projects that have been initiated in other parts of the country (Woodley and Freedman 1995), participants in the founding meeting of the Initiative included Parks Canada employees, employees from the Ontario Ministry of Natural Resources, Regional Planners, academics, elected officials from the towns of Midlands and Penetanguishene, representatives from local

cottager associations, Field Naturalists' Clubs, and government representatives from First Nation (Native Canadian) Bands, who own several large tracts of reserve land within the area. The purpose of the first meeting was to introduce all "stakeholder" groups with an interest in conservation and planning initiatives within the region to each other, and more importantly, to the framework of ecosystem management. From this symposium a nucleus of people formed what would be known as the "Greater Georgian Bay Ecosystem Initiative Working Group." This group then began work with Geomatics International (Guelph), a consulting firm hired by Georgian Bay Islands National Park, to identify core protected areas and potential linkages within the Greater Georgian Bay Ecosystem. Geomatics International produced the various maps for the Working Group and was involved in all Working Group meetings, while all of the administration of the project was carried out by the Superintendent and Chief Park Warden of Georgian Bay Islands National Park. Much of the development of the core Protected Areas and Vision Maps was done via phone, fax, and mail communications, with the group as a whole meeting on an *ad hoc* basis (personal communication with Mike Walton, Superintendent, Georgian Bay Islands National Park. May 19, 1995).

Land Management within the Region: Past, Present, and Future

Within the Greater Georgian Bay Ecosystem, many areas are protected by various levels of government. These, along with several other spaces, have been identified as core areas within the Ecosystem Plan. Sites which have been outlined as core areas by the Working Group include national and provincial parks, provincially significant wetlands, areas of natural and scientific interest (ANSIs, which are identified under provincial inventory programs), First Nation Lands (reserves), and areas identified under the Muskoka Heritage Areas Program (Figure 2).

The Muskoka Heritage Areas Program is a project recently completed by the District Municipality of Muskoka, in partnership with the Ontario Ministry of Natural Resources. The purpose of the project was to identify sites with abiotic, biotic or cultural significance which could be used to guide future planning initiatives. Although these areas themselves are not legislatively protected, they are intended to be incorporated within Crown land management documents so that their ecological integrity is maintained. As well, the Muskoka Heritage Foundation is planning a long-term private land stewardship program to protect significant natural areas (Reid and Bergsma 1994). The Greater Georgian Bay Ecosystem Working group includes members from this project, and, where jurisdictions overlapped, the Working Group based their decisions on the findings of the Muskoka Heritage Areas Program.

Similarly, the Working Group

Figure 2. Preliminary Core and Corridor Proposal for the Greater Georgian Bay Ecosystem. Core areas are darkened in black and include National and Provincial Parks, ANSI's, Provincially Significant Wetlands, Heritage Area Sites and First Nation Lands. Proposed corridors are stippled. The dashed line indicates approximately the division between the northern and southern physiogregraphic regions.

communicated with an analogous regional planning initiative being carried out by the Couchiching Conservancy, a non-profit conservation group working with the Ontario Ministry of Natural Resources, whose proposed core areas overlapped with the southern half of the Greater Georgian Bay Ecosystem (presentation by Ron Reid, Bobolink Enterprises at the Greater Georgian Bay Ecosystem Initiative symposium, Midland, Ontario. March 7, 1996).

In addition to mapping core areas within the ecosystem, a preliminary corridor proposal was developed by

Geomatics International (Figure 2). This proposal was designed to meet the need for reestablishing connectivity between habitat patches and thereby eliminate the problems of species loss. Twenty-two core areas were identified by the Working Group and most of these were linked with proposed corridors. Corridor design was based on topography and followed riparian and ravine systems whenever possible, and thus was not based directly on patterns of animal movement. As well, where possible, corridors were plotted on Crown, rather than private, land (presentation by Mirek Sharp, Geomatics International, at Ecosystem Working Group meeting, Honey Harbour, Ontario, August 23, 1995). The corridors were proposed by Geomatics, which is not considered a voting member of the Working Group. The Group has not, as yet, endorsed any of the proposed corridors, nor are they part of any official land-use regulatory framework. Full endorsement is contingent on studies as to the feasibility of implementing corridors, and the predicted success of the corridors in facilitating species movement.

The Role of Corridors

Small, isolated fragments of natural habitat, such as the core areas seen in Figure 2, should contain fewer species than large, non-isolated areas of habitat (MacArthur and Wilson 1967, Diamond 1975, Harris 1984). Conservation managers have widely accepted that by providing movement corridors, this "island effect" could be alleviated and the number of species in habitat fragments enhanced (Noss and Harris 1986). It has been proposed that corridors should serve as links between larger core areas which protect key habitats or species within a landscape (Noss 1987). As well, movement of animals from one habitat area to another is thought to allow species to withstand the effects of inbreeding and demographic stochasticity (Shaffer 1981, Soulé 1987 in Noss 1992). Further, corridors are considered to contribute to a "rescue effect" (Noss 1987, Merriam and Lanoue 1990, Henein and Merriam 1990) such that populations are maintained in areas where they might not otherwise survive without the continuous migration of individuals facilitated by corridors (Noss 1992).

There are numerous and diverse reasons for creating links between larger areas, and the term "corridor" has been variously defined (Hobbs 1992, Simberloff et al. 1992). These definitions include habitat space, buffer zones, multi-use zones, and human-built structures intended to assist animals in bypassing physical barriers such as highways. The Greater Georgian Bay Ecosystem Initiative's corridor proposal fits the definition of corridors as "strips of land to facilitate movement between larger habitats" (Simberloff et al. 1992), but can be considered as extensions to core areas (i.e., "habitat space") too.

The issue of how corridors should be used to conserve flora and fauna

remains controversial (e.g., Noss 1987, Bennett 1990, Harrison 1992, Hobbs 1992, Noss 1993, Newmark 1995). For instance, where corridors have been implemented, there is no available evidence that immigration increased within them and/or that they decreased extinction in habitat patches (Simberloff and Cox 1987); some animals with high dispersal abilities can disperse whether or not a corridor is provided (Hobbs 1992). As well, low-quality corridors might actually be worse than none at all (Henein and Merriam 1990) and corridors can sometimes lead to the introduction of non-target species, "edge" species, competitors, and predators (Noss 1987, Simberloff and Cox 1987, Thomas et al. 1990 in Simberloff et al. 1992). Examples of successful corridors are limited to small, closely spaced patches of natural habitat within highly altered agricultural areas (Bennett 1990). Little study has been done on the use and effectiveness of corridors at a larger scale, such as the one proposed by the Georgian Bay Initiative (Hobbs 1992). Nevertheless, Noss (1987) concluded that, in the absence of evidence, establishing and maintaining corridors is still a good measure to take, if only because the original landscape was interconnected. Simberloff and Cox (1987) conceded that corridors have potential for conservation but concluded that they must be assessed on a case-by-case basis and that their potential success depends on the target biota and the surrounding habitat matrix.

Effectiveness of Corridors in the Greater Georgian Bay Region

To test how well the proposed conservation network overlaid the distribution of mammals, I tested for patterns of significant positive association between distributions of mammals and location of protected areas. Protected areas were defined as legislated protected areas, and included National and Provincial Parks, the Wye Marsh, and the Trent-Severn Waterway and its associated lands. Mammals were chosen as an indicator group for the appropriate location of core areas because, of all vertebrate groups, mammal species richness is most sensitive to isolation and reduced habitat size (Schmiegelow and Nudds 1987). This test for the presence of mammals within core areas is necessary to determine the potential success of corridors. If the current core protected areas do not adequately capture the distribution of regionally rare mammals, then a proposal to link these areas would be ineffective in promoting mammal movement.

The study area was mapped into 100-sq-km blocks using the 10,000-sq-km blocks in Dobbyn (1994) for reference. The area contained 35 full 100-sq-km blocks and 37 partial blocks. Only data from the 35 full blocks was analyzed. Within each of these 35 blocks, the percentage protected area was calculated. These data were then compared with the presence–absence data from the *Atlas of the Mammals of Ontario* (Dobbyn 1994) using a chi-square statistical

test. Only mammals which were considered "regionally rare" were used for the study. These were identified using a ranked abundance and selecting those species which occurred in fewer than 30% of the blocks (Table 1). Because they were not resident throughout the region, these rare and patchily distributed species could be more sensitive to habitat fragmentation and in greatest need of protection.

The test assessed whether the distribution of mammals was evenly distributed among the various classes of blocks with respect to percentage protected areas. The null hypothesis was that the presence of rare mammals in 100-sq-km blocks was independent of the proportion of protected area in the block. Conversely, the distribution of these rare mammals could be significantly different from the independent state. A failure of the null hypothesis would lead to two possible outcomes: the presence of mammals could be significantly correlated to percentage protected area, or the presence of mammals could vary significantly from percentage protected area within 100-sq-km blocks. To enable a robust statistical test, mammals were grouped by guilds.

Results

A chi-square test for independence of rare mammals with respect to protected area was performed for all mammal guilds except shrews and moles and rabbits and hares. The null hypothesis was not rejected for any of the guilds where statistical analysis was possible. Shrew and mole abundance tended to correlate positively to percentage protected area, but not in a significant way. Rabbits and hare were uniformly distributed, although they did not occur in blocks with zero protected area (Table 2).

Discussion of Alternative Regional Conservation Strategies

The test for independence between distributions and percentage protected area indicated that the core protected areas do not significantly capture the distribution of rare mammals. Despite limitations in the data, and the large scale of the study blocks, it appears that the distribution of rare mammals is independent of the percentage protected area. Thus, the corridors proposed to link the cores would not facilitate movement of these key indicator mammals.

If specifically delineated cores and corridors are not to be the solution to habitat fragmentation in the Greater Georgian Bay Ecosystem, it becomes necessary to examine alternative ways of achieving habitat connectivity. The heterogeneity of the region suggests that different management strategies should be applied to different areas within the region.

The northern half of the Greater Georgian Bay Region is still functionally connected, so a strategic plan might retain as much of this interconnectedness as possible, rather than to define specific corridor boundaries based on topography. The majority of land in this area falls under

Table 1: Species ranking (rare species are those with abundance of 30% or less and are included in ranks 1 to 9)

rank	species
1	Water Shrew, Northern Flying Squirrel, Southern Bog Lemming, Canada Lynx
2	Hairy-tailed Mole, Gray Squirrel–Black Phase, Southern Flying Squirrel, Ermine, Woodland Jumping Mouse
3	Northern Short-tailed Shrew, Star-nose Mole, Long-tailed Weasel, Norway Rat, Meadow Jumping Mouse
4	Gray Wolf
5	Northern Long-eared Bat, White-footed Mouse
6	Meadow Vole
7	Marten, Deer Mouse
8	Little Brown Bat, Snowshoe Hare
9	Silver-haired Bat, Gray Squirrel, Coyote, Moose
10	Woodchuck
11	Eastern Chipmunk, Porcupine
12	Fisher
13	Striped Skunk
14	Black Bear
15	River Otter
16	Red Squirrel
17	Beaver
18	Mink, White-tailed Deer
19	Red Fox, Raccoon, Muskrat

provincial (Crown) jurisdiction. Areas of Crown land can be designated for natural resource extraction by the Ministry of Natural Resources (MNR) acting on behalf of the provincial government. Until the 1970s, there was little availability for public input in the process of determining what activities would take place on Crown land. Since then, some public input is facilitated by the Strategic Land Use Planning (SLUP) process, which attempts to incorporate the interests of multiple users (Hilts et al. 1986). The Public Lands Act allows areas of Crown land to be zoned as open, closed, or deferred for management purposes. The Greater Georgian Bay Ecosystem Working Group would benefit by collaborating with MNR District Managers in influencing the Land Use Guidelines. This is, in effect, what the Muskoka Heritage Areas Program is attempting to do. Instead of delineating specific corridor areas, it might be more prof-

Table 2: Chi-square tests for independence of frequency of mammal occurrence and percentage protected area ($X^2_c = 5.99, p < 0.05$)

1) Bats (3 species)

% protected area	Observed Frequency	Expected Frequency	$(O-E)^2/E$
0	7	5.33	0.52
0.1-5.0	7	5.33	0.52
5.1 and up	2	5.33	2.08
Total	16	16	3.12

2) Shrews and Moles (3 species)

% protected area	Observed Frequency
0	1
0.1-5.0	0
5.1 and up	4

3) Rabbits and Hares (1 species)

% protected area	Observed Frequency
0	0
0.1-5.0	4
5.1 and up	4

4) Rodents (9 species)

% protected area	Observed Frequency	Expected Frequency	$(O-E)^2/E$
0	6	10	1.6
0.1-5.0	9	10	0.1
5.1 and up	15	10	2.5
Total	30	30	4.2

5) Carnivores (5 species)

% protected area	Observed Frequency	Expected Frequency	$(O-E)^2/E$
0	2	5.67	2.38
0.1-5.0	6	5.67	0.02
5.1 and up	9	5.67	1.96
Total	17	17	4.36

6) Deer and Bison (1 species)

% protected area	Observed Frequency	Expected Frequency	$(O-E)^2/E$
0	1	3	1.33
0.1-5.0	3	3	0
5.1 and up	5	3	1.33
Total	9	9	2.66

itable for the Greater Georgian Bay Ecosystem Working Group to ensure that larger key habitat areas are zoned as closed for resource management. This would maintain a greater proportion of the functional connectedness of the landscape than a specifically delineated corridor system might.

In the southern half of the region, where much of the land is privately owned and in agriculture, several land-use planning alternatives are available. In Ontario, land-use planning is controlled under the Planning Act. Amendments to this Act were introduced in 1994 in an attempt to provide opportunity for proactive conservation planning (Ontario Ministry of Municipal Affairs 1994). These changes empowered municipalities to make decisions without provincial consultation, provided that plans were consistent with provincial policy statements on environmental issues and land use. In addition, the amendments allowed natural areas to be identified in planning documents and, therefore, to be more easily zoned as protected areas within municipal plans. It is important to note that these amendments to the Planning Act were introduced by Ontario's former government. The current government is proposing changes to the Planning Act which give municipalities greater independence from provinical land-use guidelines. The implications of these changes for parks and protection agencies are disconcerting, and reflect the current government's lack of commitment towards environmental issues.

A second option for land-use planning within Ontario is that of private stewardship. Programs that recognize the private stewardship of conservation lands are facilitated through the Conservation Land Act which was introduced in 1988 (Riley and Mohr 1994). In Ontario, stewardship programs are generally initiated by non-profit conservation groups and involve partnerships of public and private funding and agencies on a voluntary basis. Stewardship programs utilize a range of conservation options, from verbal and written agreements, to leases, conservation easements, purchase-saleback, and dedications (Reid and Hilts 1990). Many of these programs are straightforward and are based on the voluntary cooperation of private landowners who agree to hold all or part of their land "in trust" for conservation purposes. The variation between the options lies in the responsibilities of the landowner and the conservation group, and in the degree of legality involved. Verbal and written agreements have been the most successful in recruiting participation from landowners, although they are also the least binding. Because of differences in property laws, conservation easements have not been as prevalent in Ontario as they are in the USA, although they are coming into practice more often (Silver et al. 1995). It is my opinion that private stewardship agreements should be a strategic management direction for the

Greater Georgian Bay Ecosystem Group to incorporate into the southern half of its area. In this highly fragmented area, a system of connections is desirable, but the degree of connectedness proposed is likely to be inadequate since the core protected areas did not capture the distribution of regionally rare mammals. Although funds are not available for outright purchase of enough land to facilitate a comprehensive corridor system, agreements with private landowners could restore some of the connectedness within this area. There is a great deal of marginal and abandoned agricultural land which could be restored to provide habitat linkages within the greater regional plan.

Conclusions

This study concluded that the cores proposed for the Greater Georgian Bay Ecosystem do not adequately capture the distributions of rare mammals within the Region, and hence the corridor system proposed will be ineffective in promoting mammal movement. Furthermore, much of the Greater Georgian Bay Ecosystem, particularly in the northern area, remains in a largely undisturbed state. Hobbs (1992) suggested that in such a landscape, maintaining the functional connectedness of the landscape is paramount. Thus, rather than focusing on delineating specific corridors, the Greater Georgian Bay Ecosystem group should focus on the protection of the larger landscape matrix. This could be done through participation in Crown Land Management Planning.

In the southern half of the region, a system of corridors may well be the best regional conservation option. However, a corridor system will only be feasible through cooperation with private landowners who are willing to have parcels of land given over to natural habitat regeneration. It will be important to select lands which are valuable from a conservation perspective. More data on faunal distributions will be necessary to identify optimal locations for corridors. In some cases, landowners may be able to supply the working group with information on animal distributions within the area. Planning and implementation of a corridor system in the southern half of the Greater Georgian Bay Ecosystem should take place with full public consultation. The vision mapping process done by the Ecosystem Working Group was an initial step towards a regional conservation strategy. This study is another step in the process, and it is my view that the Greater Georgian Bay Ecosystem Initiative can meet its goal of a regional conservation management strategy through increased public involvement and the use of specific land-use management tools which are best suited to the different areas within the region.

Acknowledgments

I would like to thank Mirek Sharp and Brent Tegler of Geomatics International for providing maps and background information for the study. Mike Walton of Georgian Bay Islands National Park provided helpful information on the history of the Initiative Working Group. Thanks to Brent Tegler and Bill Stephenson for comments on an earlier draft. This project was supervised by Dr. T.D. Nudds, of the Department of Zoology, University of Guelph and I am indebted to him for his advice, support, critical reviews and enthusiasm.

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A New Perspective in Strategic Planning:

The Great Smoky Mountains Experience

Great Smoky Mountains National Park covers 514,885 acres, with 477,670 recommended for inclusion in the National Wilderness Preservation System. With a difference of over 5,800 feet in relief, it is possible to gain a vertical mile in elevation within the park's boundaries while traversing its trail system. Over 800 miles of horse and hiking trails, and 106 designated camping areas, shelters, and vehicle-access horse camps provide entry into the park's backcountry for the 500,000-700,000 visitors who come to the park each year seeking a backcountry wilderness experience.

Visitation figures during the years 1979-1993 suggest that backcountry camping, private horse riding, total backcountry visitation, and day-hiking increased approximately 15%, 30%, 45%, and 60%, respectively (GSMNP 1995). At the same time, however, the park's ability to maintain backcountry trails and facilities declined, resulting in an increase in trail deterioration and visitor complaints about poor trail conditions. The decline in attention to the backcountry coincided with an increase in annual visitation from 8 million to 9.3 million—and static purchasing power.

In an attempt to address increasing staff and visitor concerns about resource impacts, the park initiated an assessment of trail conditions (Marion 1994). The assessment used a standardized format for sharing information about trail and campsite conditions (Marion 1993). Information was collected from 72 trail segments covering 35% (328 miles) of the total trail system. The surveyed trails represented those that were either known or reported to be in poor condition and all of the Appalachian Trail, a multi-state trail which runs through the park. Survey staff recorded information on all occurrences of 25 trail features in four categories: general inventory, resource condition, design and maintenance, and visitor attraction.

The resulting data documented that 14.6 miles of trail had soil erosion exceeding one foot below grade. An additional 11.3 miles had wet and muddy soils. An average of 25.3 tread drainage features (e.g., waterbars, culverts, lateral drains) per mile of trail was also documented. Analysis of the data indicated that both the amount and type of trail use were important determinants of trail condition. Heavily used trails also had significantly more soil erosion and tree root exposure, while trails re-

ceiving a high proportion of horse use were significantly wider, muddier, and had more multiple treads. This work also indicated that water on trails, trail location, and lack of routine preventative maintenance were as important, if not more so, than the amount and type of use, as these indicators relate to trail con-dition. In general terms, over 100 miles of trail spread over the 800-mile system were in very poor condition.

With a quantitative description of the trails in hand, the next phase of the effort, one quite possibly unique to the U.S. National Park System, was the development of a strategic plan for managing backcountry recreation (GSMNP 1995). The uniqueness of the planning effort is based on how the plan was developed. It was obvious the park could not afford to bring the deteriorated trails up to an acceptable standard without help. It was also obvious that the park could not begin the process of closing heavily impacted trails without generating considerable negative sentiment, both from visitors and in the political arena. The park decided, therefore, to involve those individuals and groups most affected by, or most concerned about, trail conditions in an attempt to develop a comprehensive strategy with their input at the beginning of the planning process, rather than in reaction to a completed document.

This "new perspective" is different from the planning efforts usually undertaken in parks since public involvement in, and review of, management-oriented documents usually occurs after a draft has been completed. Exceptions obviously include General Management Plans, road construction projects, and related efforts where scoping meetings are usually scheduled early in the planning exercise. Five important points are thus relevant to the exercise as a contrast to traditional planning:

1. All discussion about why we do what we do (legislative history, policies, financial capability, etc.) is addressed at the beginning of the exercise so that participants understand our capabilities, constraints, and limitations. Although they may philosophically disagree with some of the management concepts presented, they develop a basic understanding of our role and mission.
2. We have the opportunity to facilitate discussions and focus them on what the real issues are and what needs to be done to accomplish positive change.
3. Consensus is not necessarily an intended outcome. Divergent viewpoints tend to make consensus elusive and compromise management prerogatives. However, the participation that is normally associated with the scoping is extended throughout the duration of the planning process. This tends to build momentum toward collaborative implementation, which is a more reasonable and constructive outcome than consensus.
4. Stakeholders need to become part

of the solution to the problems articulated, since the park no longer has the resources to effect positive change by itself.

5. Without the support necessary to effect positive change in a park's program, the alternatives, including the worst-case scenarios, become obvious early in the planning process.

In the fall of 1994, Peter Williams, a graduate student with Virginia Polytechnic Institute working under a cooperative agreement with the park, began the process of developing the strategic plan. He met with anyone and everyone who was interested in the issue in an attempt to not only convey the magnitude of the problem the park was faced with, but to solicit support from outside the park to become part of the solution. The process was not intended to seek consensus; rather, it sought informed participation in a process to: (a) portray the current situation, (b) assess the acceptability of that situation, and (c) determine any redirection the park needed to take.

The meetings were often intense and not without controversy. Horse-riding groups attempted to defend their interests while others pointed an accusatory finger. But the consistent theme emphasized by Williams throughout the exercises was the need to focus on trail conditions as the common concern of all, regardless of attitude or approach to enjoying the park. It also became apparent that, if a solution were to be found, it had to include both hikers and horseback riders who were willing to assume some responsibility for their actions in the backcountry.

The resultant strategic plan is divided into several components. It is intended, in part, to walk the reader through a thought process to a set of recommendations that, when implemented, should provide for marked improvements in trail conditions over the next three to five years. The introduction describes the project's process and the document's structure and defines assumptions about implementing the recommendations. The document describes the historic origins of the current trail system. The current situation is described including a discussion of mandates guiding park actions and current backcountry conditions, including the setting (which is resource-specific), opportunities (which are visitor-oriented), and stewardship (which is management-oriented). Different scenarios portray the likely condition of backcountry resources if the park isn't able to change or redirect effort towards improving conditions. Finally, the strategic plan provides management direction based upon a shared vision and—using the themes of setting, opportunities, and stewardship—provides comprehensive recommendations based upon priorities, goals, objectives, and recommended modifications to the existing trail system.

As implemented, the strategic plan focuses on a dramatic and proactive increase in trail maintenance volun-

teerism as being the cornerstone for program success. Opportunities for repairing and maintaining trails, shelters, and campsites will increase, as will visitor enjoyment. A decrease in park-based preventative maintenance demand is, likewise, expected—although it is obvious that the need for coordination will increase.

Although not completed until September 1995, the year-long planning process spawned a new beginning in how the park will manage its wilderness resources. The intensive communications process brought together, for the first time, individuals and groups with differing points of view to focus on the common theme of trail conditions. One result of this effort was the development of the Appalachian Trail Task Force, composed of organized hiking and horse-riding groups, and the Appalachian Trail Conference, which entered into a Memorandum of Agreement for joint management of those segments of the Appalachian Trail where horse riding is permitted. The Task Force also developed and printed a publication entitled "Gentle on the Land," a hiker and horseback rider code of conduct which is similar to the Leave No Trace (LNT) materials popularized by the National Outdoor Leadership School. Under a challenge cost-share agreement with the School, the park also published an LNT brochure entitled "Leaving No Trace in Great Smoky Mountains National Park." Although the Smoky Mountain Hiking Club and the Appalachian Trail Conference have been partners in maintaining the Appalachian Trail for quite some time, organized horse-riding groups have recently stepped forward to adopt trail maintenance on certain horse trails. In addition, the park was reorganized to accommodate this new thrust by establishing a full-time position dedicated to coordinating volunteerism and partnership efforts, and an additional full-time position dedicated to coordinating backcountry management functions across division boundaries.

To date, nearly 450 copies of the strategic plan have been distributed. Without exception, review comments have been positive and favorable. One stakeholder even provided an alternative location for a trail in need of relocation! Renewed interest in volunteerism has also exceeded expectations, with individuals, organized groups, local businesses, and others stepping forward to sign up for trail maintenance and other related projects.

We are now at the beginning of a new and challenging process. For too long, we have attempted to rely on internal mechanisms to meet our basic resource protection mission. Through this strategic planning process, we are now intimately involved with those who benefit most from the park in a collaborative effort to manage the park's backcountry and protect its wilderness values.

Copies of the strategic plan are available for purchase through the Great Smoky Mountains Natural History Association at its sales outlets in the park, or by contacting them at 115 Park Headquarters Road, Gatlinburg, Tennessee 37738; telephone (423) 436-0120.

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Reaching the Real Public in the Public Involvement Process:

Practical Lessons in Ecosystem Management

Introduction

Since 1983, Yellowstone National Park has conducted a series of informal but quite intentional experiments in public involvement methodology, involving fire management, wolf reintroduction, bison management, and other aspects of ecosystem management. Because of the disjointed nature of progress on these several resource fronts, we do not consider these to be in any sense tightly controlled experiments, but they are often suggestive, and sometimes conclusive. In this paper we summarize our experiences and conclusions in several categories, including: 1) Recognizing and accepting the "reachability" of a given public, which is in part a matter of accepting the non-reachability of those portions of the public on the extreme edges; 2) Breaking through the "information barrier" by producing or sponsoring enough credible scientific information to actually affect and heighten public understanding of an issue; 3) Developing communication devices to reach past the special interest filters and commercial media, to get your message directly into the hands of the general public; 4) Keeping sight of the measurable, even profound, contribution a concerned public can make to a planning process; and 5) Persisting in attempts to advance a cause through a variety of other devices, such as "changing the messenger," "empathy exercises," and other ways of reassuring a public that you really do have their interests in mind.

Who is Your Public?

An intriguing sidelight to the intermittent but undeniable success of the environmental movement over the past two decades has been a steady increase in the complexity of the relationship between resource managers and the public. As has so often happened in the past century of conservation struggles, Yellowstone National Park has found itself involved, sometimes reluctantly, sometimes grumpily, in a rapidly evolving public-policy process arena.

Public-policy process is dictated to federal agencies by a series of landmark legislative acts, for our purposes the most notable being the National Environmental Policy Act and perhaps the Endangered Species Act, but including many others that in some way compel managers to communicate their plans to the public.

For the purposes of this paper, we will assume that readers have a familiarity with the essential mandates of such legislation, and move directly along to the foggier but far more engaging realities of actually accomplishing something. Our definition of accomplishing something has two parts: 1) doing good for the resource, and 2) doing justice to the public's right to take part in doing good for the resource, both in deciding what is good, and in deciding how that good will be achieved.

In any given issue that generates significant public interest, it is a given that a full spectrum of opinion will exist on the subject. Except in extreme cases, this body of opinion will feature a great many people of lukewarm opinion. These people represent the high middle of the bell curve. They may be mildly opposed to or in favor of what you think you should do, or they may just be mildly curious about it, or they may not care at all. Their indifference, however, should not be reflected in your treatment of them, because several very ironic things are true of them:

1. They are the only group you have much chance of enlisting to your cause as the dialogue continues.
2. They are the group that traditionally you will tend to spend the least time communicating with, because so much of your energy will be absorbed by the more determined personalities on the right and left ascending and descending arms of the bell curve.
3. They may be the most numerous, but they are the hardest for anybody to communicate with directly because they aren't on the customary mailing lists and, generally, they must be reached through the dimming and distorting filters of the commercial media.
4. They are the people who most need to hear from you, and whose concern you most need to activate.

Notice that our first point here implies (or at least assumes) that the people on the right and left low ends of the bell curve are unreachable, or at least are relatively inflexible in their views. This is, of course, a gross oversimplification, because usually one of those ends is more on your side than the other (this assumes you have a side; if you don't, you ought to quit and perhaps lay bricks for a living). But it brings up our first important point, one that most experienced toilers in the fields of resource debate recognize: There are going to be people out there who are simply unaffected by your needs, your reasoning, or the best interests of your resource, but you cannot ignore those people. In fact, all too often they are pivotal in the process because of their political position or influence. But it is important, especially for newcomers dealing with major resource issues, to recognize that hostile, powerful opponents to your best judgment are like the Biblical poor: they are always with us. The corollary to this important realization is that if you aren't careful, you can waste time

on them that would be infinitely better spent elsewhere.

Forcing Facts on the Dialogue

How do you make a dent in that ill-defined mass of general, diffident public opinion? How do you spend your time best? One of the best ways we've observed is with information. Now we do not refer to the simple, hopeless-sounding, and seemingly endless mission of somehow "educating the public." We recognize that for most of the public, the issues that seem so central to our lives as resource managers tend to rank well below the latest basketball scores (at least we notice that every newspaper has a sports section, and none have a resources section). So when we speak of public education, we refer specifically to concerted, well-aimed blasts of high-density information—knowledge so overwhelming, persuasive, or even just startling, that it has what publishers looking for best-sellers refer to as "breakout potential." This isn't just information: it's news.

Our best example comes from the long saga of Yellowstone wolf restoration. In 1986, in what may have been either a well-intentioned attempt to advance the process, or simply a way to derail the process while it was "studied further," Congress funded a comprehensive examination of questions concerning the restoration of Yellowstone wolves, their potential relationship with Greater Yellowstone ungulates, their economic impact, and various other aspects of wolf restoration. Thanks to a well-organized program put together by several agencies and researchers from many universities, this was a good investment. In a two-year period starting in 1990, Yellowstone published four impressive volumes of research findings totaling more than 1,400 pages. We smothered the opponents, proponents, and the undecided in information.

But it wasn't the total weight of these volumes that mattered; it is what was done with this information that made the difference. Rather than just issue these papers to a few libraries, agencies, special interests, and managers, they were published as reports to Congress. Congress, by funding the studies, clearly asked for these answers, and so every single member of that body got them. The submission of all this high-powered and controversial science to Congress naturally involved some fanfare (as much as we could generate), and naturally attracted the attention of the press. To our knowledge, this is the only time a national park dealt directly with Congress in this way, and we later paid dearly for our boldness, but the short-term effect was very impressive, and now in retrospect, we believe it was very positive.

In this case, we generally dealt with the public through the commercial media, who reported on the completion of these gigantic volumes. In short, the media looked at these unsummarizable, highly technical reports, each containing a host of different research findings by dozens of scientists, and, rather than try to di-

gest all this information and summarize it in a short newspaper article, essentially just pronounced that "Wolves is Good." All the vast subtleties and equivocations fell aside, and as a result the reports played very well with exactly those people who needed to hear it most.

As it happened, we happily agreed with the media, and we were eventually proven correct. The reports were indeed very high-quality science; many of the papers were later published in leading peer-reviewed journals, and a whole batch of them were published together as an important monograph. But what mattered immediately is that through their short articles in newspapers, which were incredibly brief summaries, the media let the world know that: 1) No, wolves would not eat any of the children in the Greater Yellowstone; 2) Yes, both wolves and their prey species were indeed native to Greater Yellowstone ecosystem; 3) Yes, an appropriate subspecies of wolf could be found for the restoration; 4) Yes, wolves would eat ungulates but would not wipe them out and would leave plenty for hunters; and 5) No, wolves would not bring economic ruin to the region, but would, in fact, boost local economies more than they cost. (By the way, these five yes's and no's are the shortest summary ever made of those 1,400 pages).

This abrupt flood of carefully researched information certainly did not immediately quash all the myths that wolves fed exclusively on toddlers, or were the instruments of the devil; indeed, our cultural mythology is almost always more powerful than facts. But the reports resulted in a significant shift in such dialogues. Suddenly, the pro-wolf people had the most science, the best science, and, in many cases, the only science, and they put it to use. Suddenly, the middle of the bell curve was exposed to the existence of a carefully considered body of real information, a kind of information that obviously operated on a higher plane than the fourth-generation rumors and inherited hatreds and myths that had so often ruled the public dialogues. It is always hard to measure attitude shifts in the public, but this one occurred almost visibly. We never would have gotten wolves near the park without this information, and without the commercial media to enthusiastically "market" it for us.

The challenge of this tactic—one of burying your opposition in actual facts—is also its biggest drawback: it is awfully expensive. But in the long haul, when you consider all the costs of trying to make progress any other way, it can be argued that it's really quite cheap.

Bypassing the Filters

Sometimes, however, even information doesn't seem to be enough. In fact, most of the time, in our experience, even with the best information, managers may fail just because it isn't dramatic enough, or accessible enough, or even interesting enough for the media to share it with the public to the extent it must be shared. In that case, you must consider bypass-

ing your friends in the media and going directly to the middle of the bell curve with your very own words.

Talking reporters into giving you interviews, where you can serve up sound bites or even slip them their headline, will not be enough. You need to be able to talk directly to your entire constituency, and neither the broadcast media nor the print media can accommodate the kind of detail you must share. At least they cannot do so through the traditional 1,500-word articles or 90-second evening news feature. But leaving these frustrations aside, you can still take advantage of the media's unique communications system.

How? In this case, our example is the policy aftermath of the 1988 Yellowstone area fires. For those of you who don't know, those were the fires that caused the suspension of everyone else's fire management plans. For quite a while following the fires, everybody in the United States running a fire plan kept their heads down, but eventually dozens of managers all over the country surfaced with their mandated new fire plans. We in Yellowstone knew that our new plan was one of the most controversial and resource-threatening debates in the park's history, but we also believed that if only we could tell the public what the new plan actually said and did, the plan would have a chance. That also meant the beneficial effects of fires would also have a chance. Our approach was to write, design, and fund a four-page newsprint insert, complete with maps, summaries of important elements of the plan, and even a section entitled "Are any of these questions yours?" The last page was a blank tearoff comment sheet. That sheet and a 29-cent stamp made almost all adults in the greater Yellowstone a part of the dialogue. Over the course of a few days, we placed more than 150,000 of these inserts in every newspaper published in the greater Yellowstone region. We used the newspapers to get past the newspapers, and talk directly to the public. This was amazingly and surprisingly cheap. The public response was remarkably favorable, and the new plan was put into effect.

Putting the Public to Work

It is simply amazing the difference that a concerned public can make if given half a chance. Yellowstone has struggled for many years with a fantastically complex bison management situation. One of the last strongholds of wild bison in North America, the park was the site of a great conservation victory early in this century when the last wild and free-ranging animals in the lower 48 states were saved from annihilation and the population was rebuilt. But more recently, that success has turned a little sour. In the past 25 years, bison numbers have been allowed to approach a natural equilibrium with native ranges, and one result has been that more animals have been migrating beyond the boundary.

The main problem is that some are infected with brucellosis, a truly hated disease that has been the focus

of a long and popular eradication campaign by various federal and state agencies. Because of brucellosis, and because bison destroy property just by walking around, bison are largely unwelcome outside the park (elk, on the other hand, who also carry the disease, but who earn huge amounts of money by supporting a great hunting industry, are very welcome indeed).

One of the very few moments of promising progress in this contentious issue occurred a few years ago when a singularly diverse group of landowners, conservationists, cattlemen, and other special-interest representatives—all close neighbors to Yellowstone—actually got together on their own and presented the management agencies with a tolerably middle-of-the-road bison management proposal. Their proposal has not yet become policy (and may never), but it was a nearly brilliant political coup: the people on this committee were known rivals, even enemies, in the public dialogues. Thus far their good work has been squelched by the big, organized special interests. It is something of a small tragedy that their teamwork was not more promptly rewarded, but eventually much of what they suggested may work its way into the final management plan as the "reasonable alternative."

What really needs to happen, however, is for those of us in charge to find ways to activate this sort of effort rather than to wait and hope that it will happen by spontaneous combustion.

The infamous public hearing where you, your plan, and your agency are cooked like so many kabobs may be familiar to most of us, but such events are remarkably inefficient. Like our own evolution in public involvement, the special interests (on either the right or left arm of the Bell curve) have learned to make the public hearing a type of high theatre where you and I are the main course at the barbeque. Clearly we need to develop more and better ways of involving the public in non-confrontational forums. We have experimented with several; open houses, where individual people can sit down and talk calmly with individual representatives of the agencies, were effective at reducing front-page and "film at eleven" posturing in the wolf business, and we have participated in several charettes, which appear promising, but we have a long way to go.

As a side note, in the wolf restoration public involvement, although we used non-confrontational open houses, we scheduled several highly visible and very newsworthy formal public hearings. We suspected that the "black arm band" and "flower children" would never be satisfied without high theatre, so we organized sessions explicitly for them. However, we disappointed many of these people by not offering up any sacrificial lambs; instead they were staged as 1) listening sessions only, 2) they were overseen and run by female hearing officers who were perceived as non-partisan and not stakeholders

in the wolf issue, and 3) we hired the local police departments to maintain order.

Keeping the Heat Down

Our leader and mentor in these processes in the past decade was Bob Barbee, then superintendent of Yellowstone and now regional director in Alaska. A point that Barbee drilled home at every learning opportunity was that "perception is reality." This tired cliche was repeatedly given new life and meaning as we watched him wend his way through the public policy minefields.

For example, very few wolf biologists had any doubt that restored wolves in Yellowstone would fit in just fine, would not kill off the ungulates and the subadult humans, and would not bring Western civilization to an end. But a large part of the regional public believed these very things, and so, though it would have been easy to disregard ignorant public opinion because it was erroneous, we went through the long and costly exercise of formally addressing these and many other questions. In the process we learned much ourselves, and greatly improved our ability to establish a credible wolf management proposal. Again and again, it has proven better to start from what the public knows rather than from what we (either rightly, wrongly, or arrogantly) are sure we know. Again and again, addressing the public's concerns head-on has kept the heat a little lower.

The public as an audience is a strange combination of naïveté and sophistication. Most of what they know about a resource issue is learned through the media, and the story tends to develop stereotypes. The major characters tend to become cardboard cutouts of themselves at the hands of the sound-bite broadcasters. After the fires of 1988, for example, a widespread but inaccurate perception had developed that the leadership in Yellowstone National Park were short on sympathy for the people of the region; that the old fire policy was imposed without enough understanding of what the regional economic and social needs were. In order to defuse this inaccurate perception, we opened the newspaper insert with a short introduction by the National Park Service's regional director. We knew that if these very same words were attributed to the park superintendent, it would have little effect; they needed to come from someone perceived as "outside" of the local NPS establishment.

Of course they were written by us—the local establishment—no matter who they were attributed to.

This little opening message expressed heartfelt and firm concern for the park's neighbors. It emphasized the need to make sure that the park was a good neighbor in managing its fire plan, just as it was a good steward and honored its mandate to preserve ecological processes. It was the same position the park's own people had held all along, but because it came from a higher office (we of course got the regional director's office's advice and approval to put her name on it), it

was heard more clearly. Editorials appeared in major regional papers, rejoicing that at last someone had taken those Yellowstone people in hand and was making them behave. At least a little of the distrust and resentment was cooled. The park's position did not change; all that changed was the messenger who presented it.

Conclusion

Mark Twain once said that he had no objection to the truth; that if it works for you, you should by all means use it. That kind of cynicism may be good advice for some elected political figures; some seem to operate under that dictum, anyway. But Twain's quip is certainly not good advice for resource managers. In every case we have dealt with, in all of these major issues with national attention and enormous implications for the future management of the park, we have found that the more facts we could gather and distribute, the better off the resource will be in the long run.

So, since the early 1980s, we Yellowstoners have tried a few new tactics in the public dialogue arena and we've learned a few good lessons. We can summarize our experiences and conclusions in several areas, including: 1) Recognizing and accepting the "reachability" of a given public, which is in part a matter of accepting the non-reachability of those portions of the public on the left and right edges; 2) Breaking through the "information barrier" by producing or sponsoring enough credible scientific information to actually affect and heighten public understanding of an issue; 3) Developing communication devices to reach past the special-interest distorters and filtering commercial media, to get your message directly in the hands of the general public; 4) Keeping sight of the measurable, even profound, contribution a concerned public can make to a planning process; and 5) Persisting in attempts to advance a cause through a variety of other devices, such as "changing the messenger," "empathy excercises," and other ways of reassuring a public that you really do have their interests in mind.

We have dwelled on several cases that seemed to work out for us in Yellowstone and we could have added a few more success stories as well. But we don't want to leave the impression that we somehow, very smugly and arrogantly, have this stuff all figured out. We don't, and even if we did, things evolve and what might be good medicine today won't necessarily work tomorrow. We didn't list our failures, and we have had plenty of those too. What we can say about those failures, however, is that each lacked one or more of the five points listed in the foregoing discussion, and that fact should be instructive to all of us.

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