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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

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On the Cover: Farm house and home fields, Snowdonia National Park, Wales—a Category V protected landscape under the IUCN classification. A lived-in landscape where the future of farming underpins the future of the national park. Photo courtesy of the International Centre for Protected Landscapes.

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Society News, Notes & Mail

New Look, New Address for GWS Web Site

In December the GWS obtained our own Web domain. This gives us a new URL (one that is much easier to remember!), added capacity on our ISP's server, and a secure server so that we can accept credit card information over the Web. We hope these changes make it easier for you to interact with us. The new Web address is:

http://www.georgewright.org

And our new e-mail addresses:

- info@georgewright.org (for general inquiries)
- **conferences@georgewright.org** (for conference-related business)
- dharmon@georgewright.org (for Dave Harmon, executive director)
- **rmlinn@georgewright.org** (for Bob Linn, membership coordinator)
- efiala@georgewright.org (for Emily Dekker-Fiala, conference logistics).

1999 Conference Proceedings Available

On the Frontiers of Conservation, the proceedings volume from the 1999 GWS conference, is now available. The 485-page softbound book contains 87 papers from the Asheville meeting. The chapter breakdown:

- Plenary Addresses
- Interagency and Community Partnerships
- Planning for Visitor Impacts
- I&M Case Studies
- Ecosystem Management
- Marine and Coastal Environments
- Planning Across Boundaries
- Restoration of Species and Ecosystems
- Building an I&M Program
- Cultural Landscapes
- Vegetation Dynamics: Disturbance & Invasive Species
- Development of Park Policy
- Overflight and Noise Issues
- Management and Design Challenges
- Managing and Evaluating Scientific Research
- Rethinking Park Boundaries
- Mapping History
- Designing Protected Area Systems

A complete table of contents is at **www.georgewright.org/99proc.html**. The price is \$18 postpaid to addresses in North America. GWS members get a 25% discount—your price is \$13.50. (Overseas shipping is extra.) To order, go the Web address above or contact us at P.O. Box 65, Hancock, MI 49930-0065 USA. You can also order over the phone (1-906-487-9722) or by fax (1-906-487-9405) using your Visa, MasterCard, or American Express.

Nominations Open for Two GWS Board Seats

The 2000 board election, which will take place this September, is for the open seats of two retiring incumbents. Dick Sellars and John Donahue, who are respectively the president and vice president of the Society, have both reached the end of their second term on the board and are ineligible to run again. We are accepting nominations from those who wish to seek their seats. The term of office runs from 1 January 2001 through 31 December 2003. Nominations are open through 1 July 2000. To be eligible, the nominator and nominee must both be GWS members in good standing (it's permissible to nominate one's self). The nominee must be willing to travel to board meetings, which usually occur once a year; help prepare for and carry out the biennial conferences; and serve on board committees and do other work associated with the Society. Travel costs and per diem for the board meetings are paid for by the Society; otherwise there is no remuneration. Federal government employees who wish to serve on the board must be prepared to comply with all applicable ethics requirements and laws; this may include, for example, obtaining permission from one's supervisor and/or obtaining a conflict of interest waiver. The Society can provide prospective candidates with a summary of the requirements. The nomination procedure is: members make nominations for possible inclusion on the ballot to the board's nominating committee. The committee then, in its discretion, determines the ballot. Among the criteria the nominating committee considers when determining the ballot are the skills and experience of the potential nominees (and how those might complement the skills and experience of current board members), the goal of adding and/or maintaining diverse viewpoints on the board, and the goal of maintaining a balance between natural- and culturalresource perspectives on the board. (It is possible for members to place candidates directly on the ballot through petition; for details, contact the GWS office.) To propose someone for possible candidacy, send his or her name and complete contact details to: Nominating Committee, The George Wright Society, P.O. Box 65, Hancock, MI 49930-0065 USA. All nominees will be contacted by the nominating committee to get background information before the final ballot is determined. Again, the deadline for nominations is 1 July 2000.

Helminen Wins Toepfer Medal

GWS member Matti Helminen received the 1999 Alfred Toepfer Medal at the EUROPARC 99 Conference in Zakopane, Poland. The medal is awarded

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annually in recognition of service to the nature and national parks of Europe. Helminen (who, along with his wife Anja, has frequently attended the GWS Conference) was cited for more than 25 years of service to the Finnish Forest and Park Service, which he headed. His work in developing cooperation among the Baltic countries, as well as his expert input into the work of nongovernmental conservation organizations, were particularly highlighted in the award citation.

- from *Nature and National Parks*, bulletin of the EUROPARC Federation

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Dr. William B. Robertson, Jr. August 22, 1924-January 28, 2000

William B. Robertson, Jr., a pioneering Everglades scientist and one of South Florida's foremost ornithologists, died of an apparent heart attack at his home in Homestead on Friday, January 28th.

His study of wildfires in Everglades National Park in the early 1950s helped change the way the federal government manages its parks. He covinced his superiors in the NPS of the wisdom of what was then a radical concept: to save it, burn it.

His fire research is widely hailed for saving the park's pine lands—one of the world's most endangered habitats—and keeping its grasslands healthy. But Robertson was perhaps best known among South Florida naturalists as a great bird expert.

Between 1959 and 1999, Robertson and his wife, Betty, who was also a biologist, placed identification tags on the legs of more than half a million sooty terns in the Dry Tortugas. Their work helped unravel mysteries of a bird that migrates as far as the west coast of Africa.

Robertson began working in the Everglades in 1950 when he began doing research on breeding birds as a graduate student from the University of Illinois. The National Park Service hired him to work at Everglades National Park in 1951—and for almost a decade, he was the agency's only field scientist east of the Mississippi River. He worked in the park until he retired in 1997 so he could get more time to do research and spend less time behind a desk.

"Bill only retired from the government; he didn't retire from his work," said Sonny Bass, a wildlife biologist at the park. "If anything, he devoted even more time to his scholarly pursuits after his retirement."

A shy man with a self-deprecating sense of humor, Bill joked once that he loved working in Florida Bay and the Dry Tortugas because it was impossible for his bosses to find him. "You could always just pretend that your radio wasn't working," he said.

Dr. Bill, as Robertson was known, was beloved by his colleagues. He was sought out constantly by younger researchers for advice and to settle scientific disputes.

"Bill Robertson was one of my most influential mentors and professional inspirations," said Gary Davis, Channel Islands National Park. "We first met in the Virgin Islands during a 1967 field survey for a proposed jetport. We worked together closely on south Florida coastal issues until I left Florida in 1980 when our contact became intermittent at professional meetings and my visits to Florida. I saw Bill last in February, 1999, when we worked together again, planning for better conservation at the Dry Tortugas. The clarity of his

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vision and depth of his understanding will be missed in the conservation and ecology communities. We can all learn from his farsighted examples of thoughtful study and compassion for nature."

Charles Lee, senior vice president at the Florida Audubon Society, was among a group of students who accompanied Robertson on a birding trip to the Tortugas in the 1960s. Lee said he still treasures Robertson's insights into the Everglades and its wildlife.

"Bill was a quiet guy who spoke short, soft sentences between long pauses," Lee recalled. "Each word was high-value stuff. Sometimes it seemed like he must have thought that there were only so many words in him and that he was afraid he might run out, so he conserved words and only let a few out at a time. But those few words ... are among those remembered most clearly from my young years."

Robertson was a recipient of the Society's highest honor, The George Melendez Wright Award, in 1995.

Robertson's wife of 43 years, Betty, died last year. He is survived by two daughters, Sally and Amy, both of Arlington, Virginia, and a son, William B. Robertson III, of San Francisco. There was a "Celebration of Life" held at the Park on Saturday, February 26, 2000.

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Ed. note: This remembrance draws upon an obituary written by Cyril T. Zaneski and published in The Miami Herald on February 2, 2000, and is used with the author's permission.

$Box\;65$: Commentary from the GWS Office and our members

The Great Transition

Ed. note: This article originated as an exchange between the author and former NPS director George B. Hartzog, Jr., in response to the latter's request for an assessment of the challenges facing the U.S. National Park System in the 21st century. It is used here by permission.

Dear George:

form and function of the National Park Service and the form and function of the National Park System in the next millennium pressed a lot of my red buttons. To have any notion at all of Service and System in the next millennium, we must have some idea of the national and world context in which the inseparable institution/landbase will exist. Some contextual premises:

- For at least a couple of centuries, fighting our way out of the traps that we have fashioned for ourselves through our illusory biological and technological dominance as a species (especially since the Industrial Revolution) must be the main business of governance. Our numbers and our remorseless and insatiable sacking of the Earth to feed and empower human enterprises (the most significant in modern times being constant, wasting warfare or preparations for threatened warfare) have placed all nations in a scramble to control remaining basic resources—such as water, oil and gas, minerals, arable soils, fisheries, and fiber.
- 2. Through rational design, and through the workings of the Four Horsemen—now shifting from

canter to gallop across the globe—the momentum of population increase will peak (at 10-11 billion people) and begin to decline toward the end of the 21st century.

- 3. The diminishing resource base (absolutely and vis-à-vis increasing population) will become ever more valuable (especially the nonrenewable resource remainder) for making the transition to a sane (renewable resource-based) balance between human beings and the hosting biological and geophysical Earth. But will we use our remaining nonrenewables and still-functioning renewables for that transition?
- 4. Or, will we bash on within the current system, in a might-makes-right mode that will tear

the world asunder in wars between haves and have-nots over the dwindling scraps?

- 5. In either event, with the havenots in turmoil under the social and survival stresses as exemplified in Africa today, and the haves exerting their presently dominant (though increasingly irrelevant) power to keep the dynamics running as in today's Persian Gulf, the world will not be a stable place.
- 6. Stable governance over expansive reaches of the world, in the best of times, has only rarely succeeded. Not since the Roman hegemony has a vast empire spreading over multiple sophisticated countries and many centuries deserved the title "Pax." By comparison, even the Pax Britannica was a brief interlude, and ours has been only momentary.
- 7. In the worst of times, which will surely reign over most of the people and the greater part of the world in the early centuries of the next millennium, retribalization—as is now happening in Africa and the Islamic tier of the former Soviet Union (and such hotspots as the Balkans)—will challenge nation-state dominance. This will force have-nations to create extraterritorial. guarded extraction compounds and distribution corridors for critical resources. (See the writings of Robert Kaplan for illumination on this issue.)

- 8. In more advanced countries, major national or European Union-type entities will require an approximation of martial law because rationing of ever-scarcer resources (among other things) will force governmental controls over national production and consumption priorities, as in World War II.
- Even in the advanced countries, factions and resistance to stringent controls may take frontier regions back to Medieval feudalism. Russia, until yesterday a superpower, approaches this condition.
- 10. In such turbulent and straitened circumstances, national parks (a product of earlier social surplus that could afford altruism) would be as vulnerable as a waif mother with hungry children in a Dickens novel-even in the most relatively stable and wealthy countries. Even in the best of times in the USA, the national parks have been subjected to constant political and economic assault and surrounding-ecosystem damage or devastation. A worldwide trend toward cultures of poverty and political demagoguery already well-advanced in most of the world and beyond nascency in our own country— will breed short-term solutions (read: stopgaps) to increasingly urgent resource and political stability demands. China's Three Gorges Dam on the Yangtze offers a tragic case in point: Chinese and

other scientists around the world forecast disaster, but the political establishment fears imminent political instability more than long-term ecosystem destruction.

However grim this assessment, I believe it is a fair statement of what lies ahead. All the forces described above work ineluctably twenty-four hours a day around the world toward an approximation of these results and trials over the next 200 years or so. Even if we as a species succeed in the great transition, we will still see human tragedies on a scale unimaginable, continued ecosystem destructions, and a long, wrenching pull to restore the balances broken by Promethean man.

So how does NPS—this civil artifact of social surplus and altruism—negotiate the tortuous course through the disasters and the stressful changes of values and lifeways that transition demands? Without losing the essential integrity of the national parks? Without selling them off as props for industrial-scale tourism in the near term and last-chance resource reservoirs in the long term?

New chapters of civilized human adventure in our cosmos (with or without reference to national parks) depend utterly on making the transition from today's world of biospheric waste and destruction to one of sustainable human ecology within the larger biophysical ecosystem. There will be a transition in any case—we can hear the hoof beats approaching. But the one we want shall happen only if it becomes the central theme of a coalition of governance guided by enlightened human endeavor. Likewise and as a complementing element, national parks and equivalent reserves shall survive only to the extent that they demonstrate the virtues and necessities of and help show us the way to that transition.

Otherwise, in the stress-times to come, desperate politicians and utilitarian bureaucrats will sacrifice these parks and reserves to fuel the last spasms of trapped and dying societies. This would be a tragic waste of the larger social utility of the national parks: as reservoirs of biological diversity, as scientific baselines and ecosystem laboratories (linked with others around the world), as general-education universities (nearly 400 campuses in this nation alone) demonstrating natural and cultural history-including what worked and what didn't.

In these three fields—preservation of functioning natural systems, derivation of scientific data to guide reform and recovery efforts, and general-public exposure to the web of life—the national parks and similar reserves evolve from the pleasuring grounds of a more innocent age to become the lifelines back to our sustaining roots.

How fortunate that our ancestors saw public purpose in preserving beautiful natural areas. That first generous impulse has given us and our descendants a heritage not only pleasant to behold, but also to be used as an archive and tool kit to help us out of the current mess. Moreover, the national parks of the USA spurred more than a hundred other nations to create their own parks and reserves. So there is a worldwide system of reserves, each a time capsule that can help us get through the big knothole ahead. That's serendipity on a grand scale.

Philosophers have tried from earliest days to find some bigger, unifying idea that transcends human folly, pride, and intransigence. None describes better the present imperative than these words from Deuteronomy:

I have set before you life and death, blessing and curse; therefore choose life that you and your descendants may live.

On the other hand, in "The Answer" Robinson Jeffers cautions us

- Not to be deluded by dreams ... and not be duped
- By dreams of universal justice or happiness...
- or else you will share man's pitiful confusions,
- or drown in despair when his days darken.

Somewhere between choosing life and drowning in the despair of unfulfilled dreams is the greater reality of this small blue planet—this lonesome orb of life. The home of ourselves and other living things, probably the only living things we will ever know. And all we need to know to keep on living. Can we not accept human foibles and certain injustice, yet agree to contain and constrain them at the point where they would destroy the possibilities of a living future for ourselves and our partners on Earth? For only with partners aboard can we live here. And there is no place else to go. Certainly not over the next couple of decisive centuries, and never for all but a handful of us even if we do, in some Star Trek future, time-warp ourselves to another living planet. But we will not have that chance either, if first we render our home planet uninhabitable except at the most primitive levels of regression.

It's certainly a long shot, given the track record of our kind, that we will propel ourselves along rational, enlightened tracks all of a sudden. But the alternative, doing nothing, closes and locks the door.

Despite its own foibles, if there is any public institution more capable, more generally enlightened about these matters, more strongly mandated by law and tradition, more experienced in environmental education, and better endowed than the National Park Service (by the System it administers), I'd like to know.

Under your regime the Service launched many initiatives in the 1960s and early 1970s that used the parks as case studies for environmental education. Much of the infrastructure, both intellectual and physical (publications, environmental study areas, school programs, etc.), has survived and indeed flourished in the parks, despite the generally desertified political climate and discourse of intervening years.

Then we were pioneers, reaching out to a public only vaguely aware of environmental concerns. But now, with the rise of public health issues that invade families and communities across the land, plus dramatic geophysical alterations in Earth's regimes, the public is ripe for the kinds of knowledge the parks can offer. Eternal vigilance is now the watchword for environmental health as well as for democratic government.

I will not list a series of projects or objectives in this essay. The Service now has an explicit legal mandate (only implied before) to conduct and encourage scientific studies in the parks—both for the management of the parks themselves, and to convey natural and cultural history and knowledge to the public. I believe it is imperative that a blue-ribbon panel be convened, constituted of leading scientific and educational institutions and individuals, to assist the National Park Service in developing a fullpanoply program to meet the new legal mandate.

If this country—the most powerful, wealthiest (despite our fraying sleeves and cuffs), and most missionary in its national ideals—can't tackle the issues set forth above, then it's not going to happen. Well, it's got to start somewhere, and then spread and mobilize our better impulses as a nation, as a world of nations.

The National Park Service, by transforming the National Park System into a great scientific and educational base for a better world, could be a catalyst, a shot in the arm, a beacon of aspiration and accomplishment in this great aim. Don't you think the country would like a change of subject matter, a purpose that would requite our history, our rhetoric, our basic ideals? A moral resurgence of our nation commensurate with those ideals and with the needs of higher human endeavors that now tremble on the brink of oblivion?

The national parks could light the fuse, send up the flare that could get us together on a cause that overrides all others: the choice for continuing life of Earth. Lacking that basic choice we forfeit all others.

Bill Brown is retired from the National Park Service and lives in Gustavus, Alaska. His column "Letter from Gustavus" appeared in THE GEORGE WRIGHT FORUM from 1992 to 1997.

Reminder: this column is open to all GWS members. We welcome lively, provocative, informed opinion on anything in the world of parks and protected areas. The submission guidelines are the same as for other GEORGE WRIGHT FORUM articles—please refer to the inside back cover of any issue. The views in "Box 65" are those of the author(s) and do not necessarily reflect the official position of The George Wright Society.



LANDSCAPE STEWARDSHIP:

NEW DIRECTIONS IN CONSERVATION OF NATURE AND CULTURE

Guest Editors: Jessica Brown Nora Mitchell Jausto Sarmiento

Introduction

his past June, the Conservation Study Institute and QLF/Atlantic Center for the Environment convened a working session of IUCN's World Commission on Protected Areas to discuss new directions for protecting landscapes with natural and cultural value. This meeting was hosted by Marsh-Billings-Rockefeller National Historical Park in Woodstock, Vermont, and co-sponsored by the George Wright Society, the International Centre for Protected Landscapes, and US/ICOMOS.

Twenty-two landscape conservation practitioners from around the world participated in the working session (Figure 1). They presented case studies from regions as diverse as Andean South America, Oceania, the Eastern Caribbean, Europe, and northeastern North America. Participants discussed challenges and opportunities for protecting landscapes in diverse settings. Following a field trip in the Champlain Valley region of Vermont, the working session participants joined 60 of their counterparts from the New England states and eastern Canada for a one-day public forum at nearby Shelburne Farms.

At the working session, this consortium of organizations recognized the need for new models of protected areas that respond to the pressures on landscapes in many countries around the world. As countries worldwide move to expand and strengthen their national protected areas systems, greater attention is needed to protecting landscapes where people live and work. Protected landscapes (Category V in the IUCN system of management categories) and cultural landscapes (a category eligible for the World Heritage List) can provide valuable models of how to integrate biodiversity conservation, cultural heritage protection, and sustainable use of resources. This approach can also provide a way to support leadership by local people in the stewardship of these resources.

A key outcome of the working session was the establishment of a task force on protected landscapes through the World Commission on Protected Areas. This task force is charged with developing a three-year global program to promote and

LANDSCAPE STEWARDSHIP: New Directions in Conservation of Nature and Culture

demonstrate the use of the protected landscape designation. The program will identify key partners; evaluate and research existing protected landscape areas; organize and develop case study material; help to develop training and build professional skills, and work closely with specific regional protected landscape projects. Another important outcome was a plan for a pilot project on protected landscapes for the Andean region, focusing on themes which recognize the great diversity of cultural and natural resources of the region. The proceedings of the working session and public forum, available this spring, will summarize the presentations, case studies, discussions, and outcomes.

Both the working session and the public forum generated a great deal of enthusiasm for exploring new approaches to landscape conservation, and for sharing experiences with colleagues throughout the world. These discussions, and the interest they generated, have provided the background and the impetus for coediting this issue of THE GEORGE WRIGHT FORUM on Landscape Stewardship: New Directions in Conservation of Nature and Culture.

To provide a broad context for this issue, we are pleased to include a contribution that explores the protected landscape approach by Michael Beresford and Adrian Phillips, and one on the experience with cultural landscapes and the World Heritage Convention by Mechtild Rössler. In their article, Nora Mitchell and Susan Buggey examine the interface of protected landscapes and cultural landscapes and find opportunities for collaboration in the conservation of nature and culture. The next articles in this issue discuss the application of these protected landscape concepts in different regions of the world. Giles Romulus and P.H.C. "Bing" Lucas draw on protected landscape-seascape experience from the Eastern Caribbean and the Pacific to discuss the value of this approach in small island states. Fausto Sarmiento, Guillermo Rodríguez, Miriam Torres, Alejandro Argumedo, Mireya Muñoz, and Jack Rodríguez explore Andean traditions of stewardship that link nature and culture in specific case studies and suggest an innovative regional program for protected landscapes in the Andes. The concluding article by Jessica Brown and Brent Mitchell explores the value of the stewardship approach in protecting landscapes and the essential role of local people in conservation of their natural and cultural heritage.

We hope that you will share this issue with others and invite you to send your thoughts to the George Wright Society for publication in the FORUM.



LANDSCAPE STEWARDSHIP: New Directions in Conservation of Nature and Culture

- Figure 1. Protected landscape specialists from all over the world met at Marsh-Billings-Rockefeller National Historical Park in June 1999. Photo by Greig Cranna.
- Jessica Brown, QLF/Atlantic Center for the Environment, 55 South Main Street, Ipswich, Massachusetts 01938 USA; jbrown@qlf.org
- Nora Mitchell, Conservation Study Institute, Marsh-Billings-Rockefeller National Historical Park, P.O. Box 178, Woodstock, Vermont 05091 USA; nora_mitchell@nps.gov
- **Fausto Sarmiento,** Center for Latin American and Caribbean Studies, University of Georgia, G-40 Baldwin Hall, Athens, Georgia 30602-1619 USA; fsarmien@arches.uga.edu



> Michael Beresford Adrian Phillips

Protected Landscapes: A Conservation Model for the 21st Century

espite humankind's continuing best efforts to destroy magnificent landscapes, devastate natural habitats, and extinguish our fellow species, the world is still full of many stunningly beautiful places, rich in biological and cultural diversity.

Many of these places are protected areas, a concept which dates back hundreds, possibly thousands of years, but which first found its modern expression in the late nineteenth century, beginning with the establishment of Yellowstone National Park in the USA. Since then. and particularly in the last 30 years, the number and range of protected areas (defined in IUCN 1994 as "an area of land/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal of other effective means") have expanded to the extent that there are now over 30,000 such areas covering almost one tenth of the Earth's land surface. That is a conservation estate equivalent to the combined areas of China and India.

This is the impressive legacy which the protected areas movement bestows upon the twenty-first century: a world-wide protected area network of national parks, nature reserves, conservation areas, and all the other names given to these special places. This network has been established and managed by farsighted individuals, responsible governments, and others who have acted on the belief that the richest natural assets on the planet should be protected from short-term exploitation by mining, logging, and poaching, from pollution, and from destructive infrastructure developments such as new highways, reservoirs, power stations, and electricity lines. Thus the establishment of protected areas challenges the prevailing mindset that sees progress in all development, even when it sweeps away the critical environmental capital of stunning landscapes and irreplaceable biodiversity.

A particularly powerful ideal in the protected areas movement has been represented by the model of the "Category II national park"; that is, the preservation of large areas of essentially pristine nature through government agency ownership and man-

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agement. Land thus acquired is then defended against development pressures and made available for managed public use for recreation. This approach has been extraordinarily influential in countries around the world, but, as readers of THE GEORGE WRIGHT FORUM know only too well, it has encountered many difficulties.

Protected Areas at the End of the Century: Problems and Challenges

Though the gaps in the present coverage of protected areas are serious deficiencies in the global system, an even greater problem is the many threats to protected areas around the world. Volumes have been written about this topic and many conferences have addressed it, too. To summarise, we can say that protected areas face a number of challenges:

- Even when these areas exist in law, they often suffer from encroachment, poaching, unregulated tourism, deforestation, desertification, pollution, and so forth. The sheer number and extent of protected areas tells us nothing about how well they are managed. In some countries, indeed, many protected areas are really "paper parks"—there by law, but in reality largely a sham.
- Most protected areas lack management plans, yet such plans are essential if a national

park or a nature reserve is to achieve its stated aims. No business enterprise, for example, can succeed without a business plan and an investment and marketing strategy—and in this respect protected areas are no different. Often countries have invested in setting up the parks, but have not followed this through with the necessary investment in management planning.

- The skills of protected area managers are often deficient. There may be competent biologists and foresters, but managing national parks and other protected areas at the end of the century calls more for the skills of working with people, and for business and financial skills. This has special relevance in countries where protected areas are being established in emergent market economies.
- Protected areas are often ignored in national and regional development planning, and in sectoral planning. For example, those charged with transport, agriculture, or energy development frequently overlook the needs of protected areas. And in some countries these problems are exacerbated by the lack of horizontal communication between different sectors of government, and of vertical

communication between different *tiers* of government.

 Most important of all, everywhere local communities tend to be alienated from protected areas nearby or in which they live. Yet without winning the "hearts and minds" of the people directly affected, conservation is at best a means of buying time.

Such are the problems—and there are many more—facing the world's protected areas at present. And threats will increase in the future: rising numbers of people, increased demands for resources of all kinds, pollution of many sorts (often novel and insidious), the prospects of accelerating climate change, the effects of globalisation—all these represent a new order of challenge to protected areas around the world.

A New Paradigm for Protected Areas

The paradox is that the world's protected areas face ever-greater threats to their continued existence just when their values are growing in importance to humankind. It has been a paradox which has been at the core of the last two World Parks Congresses, in Bali, Indonesia, in 1982 and Caracas, Venezuela, in 1992.

Both of these events were marked by a growing appreciation of the many important roles that protected areas play in society and their potential to do so even more in future. With the Convention on Biological Diversity (CBD) now enshrined in international law, we can point up these with increasing confidence. Table 1 shows how those values affect different sectors of government.

- Biodiversity conservation: nature conservation, health, agriculture, industry, foreign affairs
- *Watershed protection:* natural resources management, water supply
- Storm protection: disaster prevention
- Tourism: economic development, transport
- Local amenity: local government, recreation, public health
- *Forest and other products:* forestry, economic development, community affairs
- Soil conservation: agriculture, natural resources management
- *Carbon sequestration:* energy policy, foreign affairs
- *Research and education:* research, science, education (all levels)
- Cultural values: community affairs, local government

Table 1. Values of protected areas and principal sectoral policy implications

If protected areas indeed have a growing value to society, and yet they are increasingly at risk, it would appear that there is something badly wrong in the way in which we plan and manage them. Not all the answers, of course, are available to protected areas managers themselves. Issues such as the global patterns of trade, war and civil strife, and climate change are matters for national governments, often working together, to address. Unless present trends in these and other matters can be rectified, much local effort for conservation is doomed.

However, there are real areas in which those who plan and manage protected areas can make a difference. Over the past twenty years or so, many of the traditional views about running protected areas have been turned on their heads. A wholly new set of ideas has appeared—a virtual revolution in the way in which we manage these areas. While the global community emphasises the conservation of biodiversity, notably through the CBD, it is now widely recognised that:

 The relationship between people and the rest of nature is complex and interdependent, and that therefore the pursuit of nature conservation and natural resource management has to take many forms and involve many stakeholders;

- Cultural and natural perspectives are often intertwined, and nature conservation and the safeguarding of traditional values etc. are therefore mutually interdependent—and instruments which can achieve both aims, and encourage a sense of stewardship towards place, are especially valuable;
- Conservation will only succeed where it is pursued as a partnership involving local people and is seen to be relevant to meeting their social and economic needs;
- Traditional top-down approaches to nature conservation focused exclusively on natural and near-natural environments, though essential, are not sufficient: alone they cannot do the job of conserving biodiversity, they are not suited to all situations, and indeed have sometimes failed;
- Many landscapes previously thought of as "pristine" are in fact the product of interaction with people over long periods of time; and
- There is a need to identify places where people live in some kind of harmony with nature and use its resources more or less sustainably, since these are valuable in themselves and can serve as "greenprints" for other places as well.

As a result, thinking on protected areas is undergoing a fundamental shift. Whereas protected areas were once planned *against* people, now it is recognised that they need to be planned with local people, and often for and by them as well. Where once the emphasis was on setting places aside, we now look to develop linkages between strictly protected core areas and the areas around: economic links which bring benefits to local people, and physical links, via ecological corridors, to provide more space for species and natural processes.

Earlier language justified the creation of parks on aesthetic grounds; we now advance scientific, economic, and cultural rationales as well. Park visitors, engaged in recreation and tourism, were once seen as the protected area's principal customers; increasingly, the local community is most often recognised as the key stakeholder. Formerly, each protected area was seen as a unique investment in conservation; we now seek to develop networks and systems of protected areas so that the conservation of biodiversity and ecosystem functions can be secured at the bioregional scale. Fifty years ago protected areas were almost entirely a national responsibility; now many are seen, at least partly, as an international concern. The result can be fairly termed a new paradigm, as summarised in Table 2.

As it was: protected areas were	As it is: protected areas are		
Planned and managed against people	Run with, for, and—in some cases—by them		
Run by central government	Run by many partners		
Set aside for conservation	 Run also with social and economic objectives 		
Developed separately	 Planned as part of a national or international system 		
Managed as "islands"	 Developed as networks (strictly protected areas buffered and linked by green corridors) 		
 Established mainly for scenic preservation 	 Often set up for scientific, economic, and cultural reasons 		
Managed for visitors and tourists	 Managed with local people more in mind 		
About protection	Also about restoration		
Viewed exclusively as a national concern	Viewed as an international concern, too		

Table 2. A New paradigm for the world's protected areas

The Protected Landscape Approach

It is against this background, and the emergence of fundamentally new ideas about how protected areas should be managed, that there is increasing interest from all parts of the world in protecting places where people live and work, places whose future depends on a collaborative approach to management, with local communities playing a full, and often leading, role. The concept of "landscape" provides a framework for this, as the term is used here to describe the meeting place between humans and the environment, and product of the inter-relationship between nature and community.

Since 1978, IUCN–The World Conservation Union has specifically recognised the value and potential of lived-in working landscapes as protected areas. It calls such protected areas "protected landscapes" (Category V; see Table 3). At a time of unparalleled pressures on our protected area network, the protected landscape model could be a key to safeguarding the living diversity of significant parts of the planet, and an essential element in the process of sustainable living.

Protected landscapes are landscapes whose exceptional natural and cultural values have led to measures for this protection. They are natural landscapes that have been transformed by human action, but also places where the natural setting has shaped the way that people live their types of settlement and their way of life (Figure 1). Protected landscapes—and seascapes—provide an important key to the realisation of sustainable living. They are usually areas of outstanding visual quality, rich in biological diversity and cultural value *because of the presence of people.* Importantly, they represent a realistic way of achieving conservation objectives on private working lands.

The landscape we see is the iceberg tip supported by complex but unseen interactions based on a series of past and ongoing decisions. If we are to prepare plans and policies for the future management of landscapes, we need to understand the nature and extent of these interactions. This is the central management challenge of protected landscapes: it needs to take account of the pattern of land use and ownership, the social structures of the area, the current state of the economy, the cultural and political organisation, and the history, the language, and religion of the area. Two factors are central to the success of a protected landscape: effective conservation of the natural and cultural environment, and continued viability of the local economy.

Interest in protected landscapes grew in the 1980s (Lucas 1992). In 1988, an IUCN General Assembly resolution recognised protected landscapes as "living models of sus-

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Figure 1. Traditional Corsican landscape—conservation through cultural survival. Photo courtesy of International Centre for Protected Landscapes.

tainable use." Following a critical review of the IUCN protected area management categories at the 1992 Fourth World Congress on National Parks and Protected Areas (Caracas, Venezuela), IUCN acknowledged the need to give more attention to protected area models based upon people living alongside nature. Thus in its new Guidelines for Protected Areas Management Categories (IUCN 1994), IUCN recognised the reality of human populations living in many so-called strictly protected areas (people live in 86% of all national parks in South America), i.e., Categories I-IV (see Table 3). Moreover, it gave more attention to Categories V and VI. Category VI, the resource management protected area, recognises places that are kept in essentially their natural state as a basis for sustainable livelihoods for local people (rubber tappers' reserves in the Amazon, for example). Category V, the protected landscape or seascape, however, represents the most altered environment of all types of protected areas—see Figure 2 below.

Protected Landscapes (Category V): A New Paradigm

Thus, new thinking on conservation generally, and on protected areas in particular, is driving the growing interest in Category V pro-

	Areas managed mainly for:
Category I	Strict protection (e.g., strict nature reserve/wilderness
	area)
Category II	Ecosystem conservation and recreation (e.g., national
	park)
Category III	Conservation of natural features (e.g., natural monument)
Category IV	Conservation through active management (e.g.,
	habitat/species management area)
Category V	Landscape/seascape conservation and recreation (e.g.,
	protected landscape/seascape)
Category VI	Sustainable use of natural ecosystems (e.g., managed
	resource protected area)

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Table 3. Protected area management categories (1994 system). Source: IUCN 1994.



Figure 2. Protected area management categories and degree of environmental alteration

tected landscapes. Historically, proareas were solely about protection; now there is also a need to focus on ecological restoration. And, most relevant to Category V, whereas previously most protected areas were strictly protected as national parks or nature reserves, now park planners argue that they should be complemented by other kinds of protected areas in which people live, where biodiversity thrives, and where natural and cultural resources are used sustainably.

Protected Landscapes (Category V) are central in this new paradigm. They can:

- Demonstrate durable resource use;
- Buffer or link more strictly protected areas;
- Conserve not only wild biodiversity but also agrobiodiversity,
- Conserve human history in structures etc.;
- Support sound local economies in rural areas;

- Support and reward the stewardship of natural and cultural resources;
- Help generate tourism revenue;
- Provide scope for restoration ecology; and
- Be used to set standards, and develop management skills, for application elsewhere.

At present the distribution of protected landscapes is skewed towards Europe, but a significant number of such areas have been established elsewhere and there is a great *potential* to apply the approach, especially in the developing regions of the world. For example, protected landscapes are being created or are under debate in small island states in the Pacific and Caribbean, the mountains of the Andes, traditional coffee-growing areas of Central America, the landscapes of New England, and the rice terraces of the Philippines.

What is emerging is a new kind of protected area, in which people live and work—a model well-suited to the new protected area paradigm. IUCN sees great potential in the wider adoption of the protected landscape approach, alongside other more strict categories of protected area. Through its World Commission on Protected Areas (WCPA), it plans to promote it vigorously in the years leading up to and through the next World Parks Congress in Durban, South Africa, September 2002.

New Management Challenges

Protected landscapes then, are lived-in, working landscapes, subject to a particular conservation regime. Their management calls for skills needed by protected area managers generally, but the emphasis must be even more upon working with, through, and for local people as the means to achieve conservation aims. Key concepts are inclusion, partnership, co-management, stewardship, and a business approach.

In protected landscapes an inclusive approach is essential, where local communities are treated as central to the future of the area, and its management is directed at enabling them to share in the responsibility and benefits of designation. Although many valuable initiatives are in place, this *challenge of inclusion* represents a substantial change in direction and a re-ordering of priorities for many protected area managers, requiring the acquisition of a range of new skills and knowledge. In particular, there is a need to implement programmes on the ground that achieve conservation objectives *and* visibly improve the social and economic conditions for people living within these areas. Increasingly, the management challenge of these special areas will be focused on that difficult point where conservation requirements and community needs diverge. As the front-line conservation professionals, protected landscape managers will find themselves placed at the

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centre of this challenge.

It follows that the planning and management of these areas must be carried out in *partnership* with the local community. Local economic initiatives and the promotion of the local economy will shape conservation objectives. Community participation should be legally secured and education and awareness-building about the objectives of the protected landscape within the community will be a priority. Without the support of the majority of the local community, the conservation objectives will not be realised. Therefore, building co*management* capacity in which management is shared with the local community will become more and more important. Significantly, the point at which many of the key decisions about the management of these areas are made is moving to the community level where the protected landscape manager is centrally involved.

The concept of *stewardship* is also fundamental to this approach. Stewardship means managing privately owned land on behalf of society as a whole, with future generations in mind. At the heart of the stewardship process lies the need to enter into agreements with landowners to secure and manage the land in the best interests of long-term environmental conservation. This interaction between people and the land in an environmentally, economically, and culturally sustainable relationship is beyond the reach of government alone. Stewardship programmes will involve land-owners, local communities, commercial operators, nongovernmental organisations, and government agencies. There is no one model to be followed in designing stewardship programmes. Rather, they must take account of the pattern of land use and ownership, the social structure of the area, the current state of the economy, the cultural and political organisation, and the history and religion of the region.

Perhaps even more so than is the case for other protected areas, protected landscape managers are akin to managers of a *business enterprise*, responsible for some of the most value natural assets on the planet and having a major influence over the livelihoods of many individuals living in the area. Increasingly, protected landscape agencies are looking to industry and commerce to provide the necessary skills. Protected landscape managers need to build on traditional experience and knowledge and bring new skills to their work. Such skills are required to:

- Prepare and present management plans based on principles of partnership where local community interests are central;
- Prepare corporate financial plans containing detailed costings and budgeting proposals to achieve specific conservation, cultural, and economic objectives; and

• Develop efficient and effective management systems and structures.

More specifically, such skills are likely to include:

- Communication, presentation, negotiation, and mediation techniques;
- Conflict management and resolution—the ability to prepare an assessment of a conflict situation and develop a strategy to manage or resolve the conflict;
- Consensus-building—developing participatory decision making techniques, understanding the dynamics of group decision making, reaching inclusive solutions;
- Collaborative management—understanding and investing in comanagement activities, developing processes and facilitating agreements;
- Organising, directing, and managing participation programmes, defining key principles of good practice, engaging interest groups and stakeholders;
- Incorporating social concerns into management plans—organising community appraisals and participatory action research;
- Integrating conservation and development programmes—designing environmental strategies and action plans, running integrated conservation and development

projects, and understanding environmental impact assessments, strategic environmental assessments (SEAs), environmental audits, policy appraisal, and policy evaluation techniques,

- Directing environmental education, information, and interpretation programmes—raising awareness, building support, organising campaigns and marketing, seeking partners in providing services, and understanding different models, concepts, and contexts; and
- Organising information management—gaining access to, prioritising, managing, and disseminating information, geographic information systems, and information technology techniques.

Conclusion

For the past 125 years, the prevailing protected areas model has been that of nature protected against people. Such areas are needed as much as ever, and nothing in this article should be read as detracting from their huge importance. But they are not enough, and the opportunities to create many more such areas are fast diminishing.

The time has therefore come to move the idea of protected areas into a new setting—to places where people live and work, into working landscapes. IUCN's protected area management category V provides the model for this. Such areas are about achieving conservation objectives in

working landscapes, based principally on working agreements with land-owners to secure and manage the land in the best interests of longterm environmental conservation. It is a model that fits with the new paradigm for protected areas generally and is well-suited to the needs of the coming century. The management challenge will be focused on that difficult point where conservation requirements and community needs diverge. New skills are needed in protected area management generally, but the need is especially urgent in the context of protected landscape management.

Ed. note: A book on "The Protected Landscape Approach" will be published before the Fifth World Parks Congress in 2002.

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LANDSCAPE STEWARDSHIP: New Directions in Conservation of Nature and Culture

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World Heritage Cultural Landscapes

he International Convention for the Protection of the World's Cultural and Natural Heritage, often referred to as the World Heritage Convention, was adopted by the General Conference of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 1972. This international treaty established a unique international instrument for recognizing and protecting both the cultural and natural heritage of outstanding universal value. It was not until 1992, however, that this Convention became the first international legal instrument to protect cultural landscapes.

In December 1992 the World Heritage Committee adopted three categories of cultural landscapes to be integrated into their operational guidelines.

- The most easily identifiable is the clearly defined *landscape designed and created intentionally by humans.* This embraces garden and parkland landscapes constructed for aesthetic reasons which are often (but not always) associated with religious or other monumental buildings and ensembles.
- The second category is the *organically evolved landscape*. This results from an initial social, economic, administrative, or religious imperative and has developed its present form by associa-

tion with and in response to its natural environment. Such landscapes reflect that process of evolution in their form and component features. They fall into two subcategories:

- A *relict (or fossil) landscape* is one in which an evolutionary process came to an end at some time in the past, either abruptly or over a period of time. Its significant distinguishing features are, however, still visible in material form.
- A continuing landscape is one which retains an active social role in contemporary society closely associated with the traditional way of life, and in which the evolutionary process is still in progress. At the

same time it exhibits significant material evidence of its evolution over time.

3. The final category is the *associative cultural landscape*. The inclusion of such landscapes on the World Heritage List is justifiable by virtue of the powerful religious, artistic or cultural associations of the natural element rather than material cultural evidence, which may be insignificant or even absent.

These revisions to the World Heritage Committee operational quidelines were based on recommendations prepared by an expert meeting, held in La Petite Pierre in France in October 1992. The World Heritage Committee adopted the revisions to the cultural criteria with the intention of including exceptional outstanding cultural landscapes on the World Heritage List. With this decision, the World Heritage Convention became the first international legal instrument to identify, protect, conserve, and transmit to future generations cultural landscapes of outstanding universal value.

An Action Plan for the Future was adopted by the World Heritage Committee in December 1993, based on the recommendations of an international expert meeting on cultural landscapes held in Germany in October 1993. This plan recommended regional expert meetings to assist with comparative studies of cultural landscapes and development of a thematic framework to assist the World Heritage Committee with the evaluation of cultural landscape nominations. A number of regional and thematic expert meetings have been held on cultural landscapes and related issues in the context of an overall global strategy for a representative and balanced World Heritage List:

- International Expert Meeting on "Cultural Landscapes of Outstanding Universal Value" (Germany, October 1993)
- Expert Meeting on Routes as Part of the Cultural Heritage (Spain, November 1994)
- Heritage Canals (Canada, September 1994)
- Asia-Pacific Workshop on Associative Cultural Landscapes (Australia, April 1995)
- Asian Rice Culture and its Terraced Landscapes (regional thematic study meeting, Philippines, March–April 1995)
- Expert Meeting on European Cultural Landscapes of Outstanding Universal Value (Austria, April 1996)
- Expert Meeting on Cultural Landscapes of the Andean Region (Peru, May 1999)
- Expert Meeting on Cultural Landscapes in Africa (Kenya, March 1999)

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Expert Meeting on Cultural

Landscapes in Eastern Europe (Poland, September–October 1999)

These expert meetings have served as milestones in the implementation of the World Heritage Convention by assisting States Parties in recognizing and nominating cultural landscapes for inclusion on the World Heritage List (e.g., Figure 1). Methodologies for identifying cultural landscapes were developed and suggestions made towards the classification and evaluation of cultural landscapes. Specific legal, management, socioeconomic, and conservation issues related to cultural landscapes were also addressed and examples of outstanding cultural landscapes discussed, which illustrated the general landscape categories in the regions. Many discussions among experts from all regions of the world also gave consideration to the need to recognize the associative values of landscapes and landscape features for indigenous people and to the importance of protecting biological and cultural diversity within cultural landscapes.

In December 1993 at its seventeenth session, the World Heritage Committee inscribed Tongariro National Park in New Zealand as the first cultural landscape on the World



Figure 1. Vernazza, one of the five villages that make up the Cinque Terre, Italy—a cultural landscape on the World Heritage List. Photograph by Linas Sinkevicius.

2000

Heritage List. The site was already included on the List in recognition of its outstanding natural values and had been resubmitted as an associative landscape under the revised criteria for cultural properties. The mountains of Tongariro National Park have cultural and religious significance for the Maori people and symbolize the spiritual links between the people and their environment. In 1994, another cultural landscape was added. Uluru Kata-Tjuta National Park in Australia was inscribed as both a living and an associative cultural landscape of the traditional owners, the Anangu Aboriginal people (Figure 2). Following the regional thematic study meeting on Asian Rice Culture and its Terraced Landscapes, the Rice Terraces of the Philippine Cordilleras were included as an exceptional example of a 2,000year-old tradition forming a landscape of great beauty. Table 1 lists the 16 cultural landscapes currently inscribed on the List.

It is evident that the World Heritage Convention can serve as a catalyst for the recognition and protection of the world's diverse landscapes. Even though only a selection



Figure 2. The 1994 inscription of Ulu<u>r</u>u Kata-Tjuta National Park as a cultural landscape gives universal recognition to its cultural significance to the A<u>n</u>angu people of central Australia.

Cultural Landscape	Year of	Country
	Inscription	
Tongariro National Park	1993	New Zealand
Ulu <u>r</u> u-Kata Tjuta National Park	1994	Australia
The Rice Terraces of the Philippine	1995	Philippines
Cordilleras		
Lednice-Valtice Cultural Landscape	1996	Czech Republic
The Sintra Cultural Landscape	1996	Portugal
Hallstatt-Dachstein / Salzkammergut	1997	Austria
Cultural Landscape		
Pyrenees Mount Perdu Patrice de	1997	France/Spain
Belfon		
The Costiera Amalfitana	1997	Italy
Portovenere, Cinque Terre, and the	1997	Italy
Islands (Palmaria, Tino, and Tinetto)		
Cilento and Vallo di Diano National	1998	Italy
Park with the Archeological Sites of		
Paestum and Velia, and the Certosa di		
Padula		
Quadi Quadisha (the Holy Valley) and	1998	Lebanon
the Forest of the Cedars of God		
(Horsh Arz el-Rab)		
Vinales Valley	1999	Cuba
Jurisdiction of Saint-Emilion	1999	France
Hortobagy National Park	1999	Hungary
Sukur Cultural Landscape	1999	Nigeria
Kalwaria Zebrzydowskaÿ: The	1999	Poland
Mannerist Architectural and Park		
Landscape Complex and Pilgrimage		
Park		

Table 1. Cultural landscapes currently inscribed on the World Heritage List

of landscapes can be inscribed on the World Heritage List, the international recognition of this type of property enhances protection by other means, including stimulating additional regional and national protection. For example, with its experience in implementing the World Heritage Convention, the UNESCO World Heritage Centre provided advice to the Council of Europe on the preparation of a European Landscape Convention. The World Heritage Committee welcomed this

initiative by the Council of Europe and encourages other regional and national efforts that serve heritage conservation.

The adoption of the revised criteria for the inclusion of cultural landscapes on the World Heritage List is one of the great success stories of the implementation of the Convention because it provides opportunities for the protection of the "combined" works of nature and of man" as defined in Article 1. At the last session of the World Heritage Committee in Marrakech, Morocco, in December 1999, five new cultural landscapes were added to the World Heritage List. Four of these were from regions of the world currently under-represented on the List, including the first cultural landscapes from sub-Saharan Africa and from Latin America (see Table 1).

At this meeting, the World Heritage Committee had a lengthy debate on the Loire Valley, a 200-km linear cultural landscape along the Loire River between Maine and Sully-sur-Loire. It was generally recognized that the Loire Valley had outstanding universal value and was worthy of being inscribed as a cultural landscape on the World Heritage List under cultural criteria. It was also noted that a steering committee, with representation from territorial authorities and institutions with involvement in the region, had been established to oversee the area and that the management of this complex and extensive cultural site was exemplary, innovative, and appropriate. However, several delegates raised concerns about the nuclear power plant located within the boundaries of the proposed site. The World Heritage Committee therefore deferred the consideration of the matter.

This discussion illustrates the complexity of cultural landscape conservation, particularly for living cultural landscapes. To provide assistance to current and potential World Heritage Site managers in charge of cultural landscapes, an international group of experts, the World Heritage Centre, and the advisory bodies to the Convention (IUCN-The World Conservation Union, the International Council on Monuments and Sites {ICOMOS}, and the International Centre for the Study of the Preservation and Restoration of Cultural Property {IC-CROM; see Box 1}) are collaborating on the development of management guidelines. They will be designed as an illustrated booklet on the everyday management and protection of landscapes of outstanding universal value.

In 1992, the World Heritage Convention became the first international legal instrument to recognize and protect cultural landscapes of outstanding universal value. This made the recognition and nomination of heritage more accessible to regions currently under-represented

Box 1. ICCROM's Heritage Settlements Program

ICCROM is an intergovernmental expert organization concerned with training and conservation of cultural heritage. It was founded by UNESCO in 1956 and is based in Rome. ICCROM's Heritage Settlements Program focuses on urban and territorial conservation issues, including cultural landscapes. This program aims to improve the integration of cultural heritage with sustainable planning, management, and development of heritage resources associated with human settlements, both urban and rural. At the international level, the program provides a forum for sharing ideas and practices. At the regional level (currently in northeastern Europe, Latin America, and Southeast Asia), the focus is on the specific needs and circumstances of the area. At present, the territorial management aspect of the program includes a global survey of initiatives and activities concerning cultural landscapes, pilot projects for cultural landscape management (for example, in the World Heritage Site of Cinque Terre, Italy), and participation in the development of management guidelines for World Heritage Cultural Partners include local authorities, universities, Landscapes. intergovernmental and non-governmental organizations, and development agencies. For more information, see the ICCROM Web site, http://www.iccrom.org.

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on the World Heritage List and gave new momentum to the interpretation of heritage. Since 1993, numerous States Parties have identified potential candidates and have nominated landscape properties. Collectively, these countries, working through the World Heritage Convention, have contributed to ensuring that our global cultural landscape heritage receives appropriate conservation and recognition at the international level.

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Protected Landscapes and Cultural Landscapes: Taking Advantage of Diverse Approaches

Protected landscapes and cultural landscapes share much common ground: both are focused on landscapes where human relationships with the natural environment over time define their essential character. In protected landscapes, the natural environment, biodiversity conservation, and ecosystem integrity have been the primary emphases. In contrast, the emphasis in cultural landscapes has been on human history, continuity of cultural traditions, and social values and aspirations. Yet in spite of the strong dichotomous tradition, recent experience has demonstrated that in many landscapes the natural and cultural heritage are inextricably bound together and that the conservation approach could benefit from more integration. This paper explores the recent recognition of the value of both cultural landscapes and protected landscapes and the convergence in conservation strategies.

International Recognition of Cultural Landscapes through the World Heritage Convention and the Relationship with Natural Heritage

The concept of cultural landscapes is not new, although it has only relatively recently become a prominent part of the international cultural heritage movement (see Rössler's paper, this volume). After nearly a decade of debate, in 1992 the World Heritage Committee (an international committee with responsibilities for implementing the World Heritage Convention, adopted in 1972) agreed that cultural landscapes could meet the criteria of "outstanding universal value" and revised the convention's guidelines accordingly. In doing so, the committee recognized that cultural landscapes have values in their own right that are different from the scientific and the perceptually based scenic qualities of properties valued for their natural characteristics.

The guidelines also specifically address the relationship between cultural heritage and natural resource values by acknowledging that cultural landscapes represent the "combined works of nature and of man" as designated in Article 1 of the con-

vention: "They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal" (section 36 of the guidelines). In section 37, the term "cultural landscape" was defined as "a diversity of manifestations of the interaction between humankind and its natural environment."

By this definition, a cultural landscape is created through the interrelationship of culture and nature, which shapes environments over time and results in landscapes of today.

The World Heritage guidelines also specifically integrate nature conservation into the definition of cultural landscapes, referring to the role of cultural landscapes in sustainable land use and to their importance, in certain situations, for maintaining biological diversity. As these sections state:

Cultural landscapes often reflect specific techniques of sustainable landuse, considering the characteristics and limits of the natural environment they are established in, and a specific spiritual relation to nature. Protection of cultural landscapes can contribute to modern techniques of sustainable landuse and can maintain or enhance natural values in the landscape. The continued existence of traditional forms of land-use supports biological diversity in many regions of the world. The protection of traditional cultural landscapes is therefore helpful in maintaining biological diversity (section 38).

The committee also recognized the great diversity of cultural landscapes around the world. To distinguish their different values, they defined three categories of cultural landscapes.

Category 1, the *"clearly defined* landscape designed and created intentionally by man," largely concentrates on parks and gardens (section 39-i). Certain World Heritage landscapes, like the Cultural Landscape of Sintra in Portugal and the Lednice-Valtice Cultural Landscape in the Czech Republic (Figure 1), whose principal values are clearly rooted in their design, are equally clearly "working landscapes" that reflect particular cultural responses to the natural environment. A recent presentation on the 200-sq-km Lednice-Valtice Cultural Landscape pointed out that "human creativity has completely changed the natural environment and created a complex cultural landscape producing new natural environments."

Category 2, "the "organically evolved landscape," reflects that process of evolution of cultural factors in association with the natural environment over time in their form and component features. Such landscapes derive "from an initial social, economic, administrative, and/or religious imperative" and have de-



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Figure 1. In the Lednice-Valtice cultural landscape of the Czech Republic, human creativity has completely changed the natural environment and created a complex cultural landscape, producing new natural environments. *Photograph by Jessica Brown.*

veloped their present forms by association with and in response to their natural environment. "Such landscapes reflect that process of evolution in their form and component features." They fall into two subcategories:

- "A relict (or fossil) landscape [such as an archaeological landscape] is one in which an evolutionary process came to an end at some time in the past, either abruptly or over a period. Its significant distinguishing features are, however, still visible in material form."
- "A continuing landscape is one which retains an active social role in contemporary society closely associated with the traditional way of life, and in which the evolutionary process is still in progress. At the same time it exhibits significant material evidence of its evolution over time" (section 39-ii; for an example, see Figure 2).

By virtue of their organic nature and continued management and use over time, all landscapes may be said to have evolved. The essence of the organically evolved cultural landscape, whether relict or continuing, is that its most significant values lie in the material evidence of its evolution in the context of a natural environment that influenced and shaped it. Evolved continuing cultural landscapes, such as the Rice Terraces of the Philippine Cordilleras and the Hallstatt-Dachstein Salzkammergut Cultural Landscape in Austria, are traditional settlements that embody cultural adaptations to specific natural environments through which they have shaped both a livelihood sustained over time and a distinctive sense of place.

Category 3, the *"associative cultural landscape,"* derives its significance from *"the powerful religious,* artistic or cultural associations of the natural element rather than material cultural evidence, which may be insignificant or even absent" (section 39-iii).

A 1995 workshop on associative cultural landscapes, held in the Asia-Pacific region "where the link between the physical and spiritual aspects of landscape is so important," elaborated on their essential characteristics: "Associative cultural landscapes may be defined as large or small contiguous or non-contiguous areas and itineraries, routes, or other linear landscapes—these may be physical entities or mental images embedded in a people's spirituality, cultural tradition and practice. The attributes of associative cultural landscapes include the intangible, such as the acoustic, the kinetic and the olfactory, as well as the visual" (Australia ICOMOS 1995). Tongariro National Park in New Zealand and Uluru-Kata Tiuta National Park in Australia are World Heritage Sites designated for both their natural and cultural qualities. They are also tra-



Figure 2. Woman planting rice in Ban Lac village near Mai Chau, Vietnam—a continuing landscape of Southeast Asia. Photograph by Barbara Slaiby.

ditional homelands of indigenous peoples who have lived on these lands for centuries and have powerful spiritual associations with these places, often most vividly expressed in their oral traditions passed from generation to generation. An international symposium, "Natural Sacred Sites – Cultural Diversity and Biodiversity," convened in the fall of 1998 further explored this important dimension of associative cultural landscapes (UNESCO 1998).

Since many of the World Heritage nominations for cultural landscapes include natural resources as well,

teams of cultural resource experts from the International Council on Monuments and Sites (ICOMOS) and natural resource experts from **IUCN-The World Conservation** Union conduct the evaluations. Adrian Phillips, chair of IUCN's World Commission on Protected Areas, has written about the importance of recognition of cultural landscapes by the World Heritage Committee: "The significance of this development is not confined to the relatively few sites which will be recognized under the convention. Just as important in the long run is the encouragement that the international interest in World Heritage cultural landscapes will give to the conservation of landscapes generally and to the collaborative working between experts in cultural conservation and the conservation of natural values" (Phillips 1998, 29).

International Recognition of Protected Landscapes through the Work of IUCN and the Relationship to Cultural Heritage

IUCN distinguishes protected areas in six categories. Category V, Protected Landscape/Seascape, is defined as "a protected area managed mainly for landscape/seascape conservation and recreation. It is an area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance, and evolution of such an area" (IUCN 1994).

The key areas of significance of protected landscapes, as described in IUCN's "green book," are high scenic quality, diverse associated habitats, flora and fauna along with manifestations of unique or traditional land use patterns, and social organizations as evidenced in human settlements and local customs, livelihoods, and beliefs (IUCN 1994). Opportunities for public enjoyment through recreation and tourism are found within its normal lifestyle and economic activities. Harmonious interaction of nature and culture, diversity of landscape and habitat, biodiversity, and preservation of the social and cultural fabric characterize protected landscapes. The paper by Beresford and Phillips in this issue further elaborates on the IUCN's categories of protected areas and on the importance of protected landscapes and their critical role in conservation today.

The IUCN system of categories has been used successfully by many countries as a management framework (see papers by Romulus and Lucas and by Brown and Mitchell in this volume). Protected landscapes in this system are a complement to traditional national parks and provide

opportunities to directly engage local communities in stewardship.

The Great Divide: A Dichotomous Tradition

Examining the fields of nature conservation and cultural resource preservation side by side illustrates the dramatic dichotomy in the perception of landscape and the relationship of humans and the environment. One perspective is biocentric, based on the intrinsic value of wildness and its complex of species in the absence of humans; the other, anthropocentric, celebrating the many aspects of cultural achievement and development.

Harald Plachter and Mechtild Rössler, reflecting on the implementation of the World Heritage Convention which recognized both natural and cultural heritage, noted that the World Heritage Committee tried to avoid separation between nature and culture, but that there was difficulty in bridging this gap:

The distinction between different ways of thought and scientific backgrounds, particularly between art history and nature protection, was evident. While art historians took single monuments as their main focus, the natural scientists did not recognize the immense cultural influences on nature. For natural scientists the protection of threatened species and of 'untouched' natural areas from human influence was the main goal. Nature modified by humans seemed beside the point to them, had little value and was not recognized as a genuine problem for conservation.... Dealing with cultural landscapes has moved our attitude on and our evaluation of 'monuments' and 'wilderness' (Plachter and Rössler 1995, 16).

IUCN's Adrian Phillips also has noted the long tradition of this dichotomy. "The separation of nature and culture—of people from the environment which surrounds them—which has been a feature of western attitudes and education over the centuries, has blinded us to many of the interactive associations which exist between the world of nature and the world of culture" (Phillips 1998, 36).

Environmental historian William Cronon has argued that the dichotomy we have created to conceptualize nature and culture does not assist in developing integrated models (Table 1). He writes that "we need to embrace the full continuum of a natural landscape that is also cultural, in which the city, the suburb, the pastoral, and the wild each has its proper place, which we permit ourselves to celebrate without needlessly denigrating the others" (cited in Phillips 1998, 29). This middle ground is fertile ground for new directions in conservation.

Given this divergence in traditions and values, the challenges of multidisciplinary work are clear—but so is its importance. Many places do have a complex of resources and multiple values and it is therefore critical to be able to recognize this in the development of management programs. A review of a few recent trends in each field illustrates the

Culture		Nature		
	Cultural Landscapes / Protected Landscapes			
	Middle Ground			
"Home"				
civilization		wilderness		
human		natural		
profane		sacred		

Table 1. The dichotomy of culture and nature. Adapted from Cronon 1995.

convergence that creates opportunities for collaboration. In natural resource preservation:

- There is increasing recognition that to protect species and their habitats, it is often important to encompass larger areas than have traditionally been protected. This increase in the size of areas of concern enhances the proximity to where people live and work.
- Ecological research has demonstrated the pervasiveness of human influence and illuminated an appreciation of the role of disturbance—either natural or human-generated—in shaping ecological systems. Both research and management experience illustrate that active intervention in certain situations may be required to sustain habitat for certain species.
- The recognition of the importance of incorporating people into conservation programs is increasing. In many countries

throughout the world, the importance of working with local people and their cultural traditions in developing nature conservation programs is receiving increasing emphasis.

In cultural resource conservation:

- The recognition of cultural landscapes is representative of the broadening of the definition and scope of cultural heritage. There is specific recognition of the potential natural resource values in cultural landscapes.
- The places of cultural interest may be large—hundreds or even thousands of acres. Cultural landscapes of this size would have tremendous potential to include important natural areas.
- As with nature conservation, there is a growing recognition that the values and priorities of people today are integral to resource evaluation and ultimately critical to the success of any conservation effort.

Each of these current trends contributes to a new climate that encourages collaboration across disciplines.

Finding the Interface between Cultural Landscapes and Protected Landscapes

"Cultural landscapes are at the interface between nature and culture. They represent the permanent interaction between humans and their environment, shaping the surface of the earth. With the rapid social and economic development cultural landscapes belong to the most fragile and threatened sites on earth. Adapted protection and proper management is urgently needed" (von Droste, Plachter, and Rössler 1995).

A number of recent initiatives have highlighted the common ground between cultural landscapes and protected landscapes. The proposed anthropological approach for the World Heritage Committee's Global Strategy, for example, focuses on two themes: human co-existence with the land and human beings in society. This direction reflects the growing recognition that material and immaterial, natural, spiritual, and cultural factors are complexly intertwined in the heritage of many countries.

An international expert meeting organized by the World Heritage Centre in Amsterdam in March 1998 examined the issue of amending the method for assessing nominations by establishing a single set of criteria in place of the long-standing separate criteria for natural and cultural properties. Most of the case studies at that conference illustrated places that are characterized by a combination of natural and cultural landscapes, and a number are already inscribed on the World Heritage List (see Rössler's paper in this volume). The concept of a single integrated set of criteria, articulated at the 1996 meeting in La Vanoise, is now endorsed by the World Heritage Committee's three advisory organizations: IUCN, ICOMOS, and the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM). Rather than initiating a new set of criteria, they propose amalgamating the existing natural and cultural criteria into a single set, which would be applied for all properties. Conditions of integrity are also proposed to be applicable to all nominated properties. While the Committee has not yet acted on the recommendations from the meeting, the proposed amendment would facilitate recognition of the diverse values of both cultural landscapes and protected landscapes.

Adrian Phillips recently noted a growing interest in cultural landscapes within the nature conservation community. He attributes this to many factors, including the "declining power of the idea of pristine wilderness, the realization that many disturbed ecosystems are important

to [nature] conservation, that agribiodiversity is a resource to be protected along with wild biodiversity, and the need to find models of sustainable land use" (Phillips 1998, 21).

One of the contributions of cultural landscapes to World Heritage Site management is the recognition that inscription and ongoing conservation must involve the people who live in the designated area. The importance of local involvement in the processes and decision-making related to cultural landscapes—from identification to description of their values, to nomination, implementation, educational role, and long-term outcomes—is crucial to their sustainability. In Canada, the involvement of aboriginal elders in the early stages of the designation process has now become standard in federal designations involving lands associated with the history of aboriginal peoples. In at least three significant projects, the involvement of elders led to a substantially different exploration and identification of place that is more adequately rooted in the culture of the aboriginal people. It is instructive to recognize how results differ between consultation and involvement. For a wide variety of reasons, involvement of associated people and communities in the identification of cultural landscapes, and the description of their values, is fundamental to an effective process for both the short- and the long-term management of these places. The experience with protected landscape conservation has also demonstrated that working with local communities is a critical component in a conservation strategy (see the paper by Romulus and Lucas in this volume).

From the experience of cultural landscapes we have also learned the importance of listening to the values, priorities, needs, concerns, and aspirations of the associated communities. These will shape their working relationship with conservation obiectives, whether commemorative or ecological. These places embody their history, and it is they who have been, and will be, their stewards. They know these places, where they have often lived all their lives, and their ancestors have likewise lived in them for centuries. They know them from close observation as well as from cultural transmittal from one generation to the next. It is important to respect their traditions and the rhythms of their culture, embodied in cosmologies, stories, behavior, rituals, and traditional environmental knowledge, to come to an understanding of these landscapes.

Mechanisms are needed for the effective participation of communities in the management and development of cultural landscapes and protected landscapes as well as in the development of sustainable approaches for them. The distinctiveness of local planning environments must be recognized and respected.

Management approaches that are based on principles (e.g., public benefit, understanding, integrity, and respect) and on values, rather than on regulations, can encourage community involvement. Requiring environmental assessments to include traditional environmental and cultural knowledge as an integral part of the knowledge base and links the processes and outcomes more closely to the community. Issues will often be multi-jurisdictional and multicultural, with a need for processes to help stakeholders deal with conflicting interests and objectives.

Concluding Remarks

A cultural landscape perspective explicitly recognizes the history of a place and its cultural traditions in addition to its ecological value. Thus, this approach is appropriate for places with a settlement history. A landscape perspective also recognizes the continuity between the past and with people living and working on the land today. It explores how sense of place, cultural identity, and connections to the past can become touchstones for deepening and broadening the impact and relevance of conservation. Concurrently, the concept of protected landscapes has advanced the practice and thought for natural area conservation. Today, the field of natural resource conservation recognizes an ecosystem approach and the importance of working with people, their knowledge of the local ecology, and their cultural traditions in developing conservation strategies. These concurrent developments in cultural and natural conservation have set the stage for a rethinking of landscape conservation and an unprecedented opportunity for collaboration.

These observations on recent trends in conservation set the stage for an evolving new approach to landscape stewardship. This approach recognizes the multiple values of places with a complex of natural, historic, and cultural resources. It re-connects a fragmented perspective of the environment and is grounded in the way people view places and the values of those places in relation to their lives. The result is a gradual, but fundamental change in the way we look at the world and at the very purpose of conservation. Given the strong wilderness preservation tradition in the USA and many other countries, this represents an important expansion of conservation theory and practice. This shift has implications for stewardship, encouraging a vision that is respectful of natural processes and cultural traditions and relevant to community needs. This new approach holds great promise for furthering individual and community commitment and involvement in conservation action.

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Giles Romulus P.H.C. Lucas

From the Caribbean to the Pacific: Community Conservation in Small Island States

he islands of St. Lucia in the Caribbean and Espiritu Santo in the Pacific (Figures 1 and 2) are distant from England's Lake District, but the concept of *protected landscapes*, promoted at an international symposium there in 1987 (which produced the Lake District Declaration on protected landscapes), has been adopted by resource owners in these far-flung communities.

Today, the idea of communitybased protected areas is taking hold in the Caribbean and the Pacific, typified by the Praslin Protected Landscape in St. Lucia and the Vatthe Conservation Area on Espiritu Santo in the Republic of Vanuatu.

Both protected areas came into being in response to the realities of

many small independent island states where efforts in colonial times to establish protected areas on the conventional Yellowstone model largely failed because they lacked the support or involvement of local people in regions where communal ownership was the norm and there was almost no state-owned land.



Figure 1. Location of St. Lucia, Lesser Antilles.



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Figure 2. Location of Espiritu Santo, Vanuatu, South Pacific.

St. Lucia, part of the Lesser Antilles in the Windward Island group in the Caribbean Sea, has an area of 616 sq km and a population of just over 146,000, most of whom occupy the coastal fringe while the rugged interior is forested and provides the main source of the island's water supply.

By any international standard, St. Lucia is a small country with a number of developmental and environmental problems, including high unemployment and underemployment, as well as dependence on an export economy with bananas as the cash crop and tourism as the fastestgrowing sector. Environmental problems vary from deforestation, soil erosion, increasingly high turbidity levels in coastal waters, land and water pollution, and loss of terrestrial and marine biodiversity. Globalisation exacerbates these problems, and is seen as being less sympathetic to small island states. Consequently, the reality of survival at the international, national, and community levels is a critical factor which forms part of the drive towards sustainable development. It is within this context that conservation and

development strategies must be developed.

The St. Lucia National Trust, a statutory body which receives some support from government, is the main environmental nongovernmental organization (NGO) and has taken a lead in protected areas. The Trust has developed St. Lucia's protected areas plan, which advocates conservation as an indispensable basis for a form of development which is "equitable, sustainable and harmonious." The plan regards natural and cultural resources as the capital on which St. Lucia's development strategy can be built, as the economy is based on these resources.

The Trust presented its proposal for a system of protected areas to the government of St. Lucia after a fouryear participatory planning process as a mechanism to maintain that capital, which includes forest, plants, animals, the landscape, water, and culture. With this goal in mind, a protected area is defined in the plan as "portions of the national territory ... which are placed under special management status to ensure that the resources they contain are maintained and made accessible for sustainable uses compatible with conservation requirements."

The Praslin Protected Landscape is one of twenty-seven management areas in St. Lucia's protected areas plan. It covers 874 ha of low-lying coastal lands with xerophytic vegetation, three offshore islands, coral reefs, seagrass beds, mangroves, mudflats, and a delta. The area is of outstanding natural beauty and is the habitat for several endemics. A key element in maintaining community support is that traditional uses of natural resources by the coastal communities of Praslin and Mamiku continue. The protected landscape incorporates the longest coastal nature trail in St. Lucia (Figure 3), the Fregate Islands Nature Reserve, and Praslin Island, where translocation of an endemic lizard has proved successful.

Over the last five years, the St. Lucia National Trust has engaged the community in a participatory planning process identifying community needs, preparing a community strategic plan, designing and implementing projects to meet community needs, and establishing a development committee which is nationally known and has so grown in stature that it has been able to negotiate with the prime minister of St. Lucia for development projects. The committee is now looking to develop and market the Praslin Protected Landscape as a nature and heritage tourism site (Figures 4 and 5) while traditional canoe-building continues and coastal waters support a thriving industry in seaweed cultivation.

Although it has not been formally designated, the Praslin Protected Landscape has provided St. Lucia

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Figure 3. Eastern nature trail, St. Lucia. Photograph by St. Lucia National Trust.



Figure 4. Visitors to the Praslin Protected Landscape. Photograph by St. Lucia National Trust.

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Figure 5. Anse Galet (East), Praslin Protected Landscape. Photograph by St. Lucia National Trust.

with a working example of multipleuse activities going on without compromising the integrity of the environment.

A parallel development is taking place in the South Pacific in the Republic of Vanuatu, which came into being in 1980 out of the amazing colonial structure of the Condominium of the New Hebrides. Here, the predominantly Melanesian population was governed jointly by Britain and France, with a rigid pecking order and dual school systems using different languages.

Like most small island states, Vanuatu faces socioeconomic problems similar to St. Lucia. Additionally, like most new Pacific nations, the natural resources of Vanuatu are mostly owned by communities and families. Consequently, efforts by past colonial administrations to establish government-managed protected areas failed miserably, as the people saw the concept as another way of alienating them from their resources. It has taken until the present decade to break this impasse and to seek to ensure conservation of terrestrial and marine resources by blending traditional mechanisms with modern revenue-earning concepts such as ecotourism.

Some 27,000 of Vanuatu's 155,000 people live on Espiritu Santo, the republic's largest island at 4,010 sg km, named by a Spanish

expedition under Pedro Fernandez de Quiros which came in 1606 to Big Bay in the northern part of Espiritu Santo and established a short-lived settlement there.

The Vatthe Conservation Area at Big Bay lies on an island known to many thousands of American service personnel during World War II. Vatthe means "eye of the sea" and the conservation area there contains the only extensive lowland and limestone forests in Vanuatu not yet logged. And the Vatthe forest could so easily have gone the same way.

The forests are owned by the people of two villages, Sara and Matantas, and they were literally at war over a boundary dispute. Raids on each other's village were followed by litigation in Vanuatu's Supreme Court which decided in favour of Sara village but urged negotiation with Matantas because Matantas people had a long history of using the forest.

Into this situation came two New Zealanders. One from a logging company with a suitcase full of dollars—more than these largely subsistence communities could imagine. The logger wanted to buy their trees to be felled. The other person who came was Sue Maturin from New Zealand's Forest and Bird Society, invited by Vanuatu's small Environmental Unit to look at the area's biodiversity values and at ways the communities could generate sustainable income from the resources of the forest and sea.

Chief Lus and Chief Moses, the two village leaders, made it clear to both the logger and to Maturin that they didn't want their forest destroyed but did want to earn some income to give them a better lifestyle. The key to achieving this goal was the intergovernmental South Pacific Regional Environment Programme (SPREP) based in Samoa with an internationally funded project to support biodiversity conservation in conjunction with sustainable living for communities.

Finally, after a long time of negotiation, Chief Moses and Chief Lus agreed to set aside their differences and signed up to establish a conservation area. To seal the bargain they planted a cycad in a symbolic gesture of peace.

The Vatthe Conservation Area's 4,200 ha include lowland forests on the alluvial plain and forests on a raised coral escarpment some 4 km inland. Vatthe includes about 250 ha of garden and cropping land as well as the Jordan River and a 500-m riparian zone on its western bank and the black sand beach of Big Bay. Several broad plant associations are represented with the alluvial plains, in particular, supporting species-rich forest.

Now, the communities work cooperatively through a conservation area committee with a conservation area

support officer funded through SPREP helping the communities establish forest walks, build small tourist bungalows and an equally small restaurant, and train villagers as guides and service providers. The support officer, who is a Vanuatu national, has also seen a community water supply established, and markets and coordinates a modest ecotourism operation with support from the New Zealand government. This brings in useful income and employment, provides a market for cultural products, and protects their forests, fisheries, and way of life.

The two chiefs recently told a visiting group that "We have committed ourselves and our people to working together as stewards for the area so that our children and grandchildren can share the benefits from the forest and the sea."

Vatthe is not alone, as the SPREP project has so far helped twelve Pacific Island nations set up 17 community-based conservation areas on land and water. This represents a huge step forward in fostering conservation in this region of small countries in the vast Pacific.

Praslin in the Caribbean and Vatthe in the Pacific illustrate the opportunities provided by this management category:

• It provides a mechanism to conserve biodiversity in an environment where plants, animals, and people can live in harmony.

- It is particularly valuable where land is in short supply and is under pressure for development.
- It is particularly useful where most of the land is in private or community ownership and acquisition is not an option, allowing for protection through stewardship techniques.
- It is a more politically acceptable management category because traditional and sustainable activities are encouraged rather than eliminated.
- It provides an opportunity to use an integrated approach to sustainable management addressing both environmental and socioeconomic development making it particularly relevant in a developing-country context.
- It illustrates the power of participatory planning and co-management of resources leading to community empowerment.
- It enables communities as resource users the opportunity to continue to make a living off the land or sea and create new economic opportunities; for example, in nature and heritage tourism.

The major challenges faced in such small island states are the lack of trained professionals, insufficient published case studies on successful ways and means of establishing pro-

tected landscapes, and inadequate fiscal and other incentives to support landowners to protect their lands. Though less common, there is still some resistance by governments to share management with communities and NGOs while governments still tend to judge the success of a protected area by its economic usefulness without balancing its biodiversity and intrinsic worth. Appropriate legal mechanisms for protected landscapes in small island states remain to be worked out, while funding both the establishment of protected areas and, particularly, their maintenance remains a major problem.

Nevertheless, the experience in St. Lucia and Vanuatu illustrate clearly that the protected landscapes concept offers small island states a vital way forward towards sustainable living.

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Andean Stewardship:

Tradition Linking Nature and Culture in Protected Landscapes of the Andes

Resumen

En los paisajes protegidos de los Andes, la mayordomía que se ha experimentado en diversas regiones que han forjado intrincados modelos de conservación y desarrollo a través de los siglos. De las prácticas de administración de recursos y de uso de la tierra, los modelos andinos permiten generalizar las nociones que permiten unificar la naturaleza y la cultura en un todo integrado como paisaje protegido, para vincular la biodiversidad y gestión humana como impulsoras de una simbiosis que ha forjado la identidad de sociedades de montaña.

Al presentar varios casos de estudio provenientes de diferentes países andinos, incluyendo Colombia, Ecuador, Perú y Bolivia, se perfilan los diferentes criterios necesarios para la mayordomía del paisaje cultural en los Andes.

Introduction

tradition of stewardship is embedded in the popular culture of the Andes. It has helped to sustain practices associated with land use in the local communities living and working in mountainous landscapes (known as "lifescapes" for short). The actors of the Andean drama have not only been objects, but subjects of holistic collaborative management as stakeholders for conservation and development (Gade 1999). They are regional and multilateral organizations; governmental agencies at the local, provincial, and national levels; non-governmental organizations; universities and research centers; and traditional and indigenous communities. In this mixture of conservation scenarios, the task of applying IUCN Category V protected landscapes in the region is to enrich options of sustainable development by bringing to the forefront the concept of

culture and nature as an integral unit, with important roles for the local players as stewards of both their natural and cultural heritage (Phillips 1998).

We argue that, once Category V is officially implemented in the region, it may help to change the "paper

parks" problem found in most Latin American countries. The case studies included in this paper may lead to a





Figure 2. Several countries in the Andean region have been developing legislation enabling designation of protected landscapes. *Photograph by Jessica Brown.*

review of the management categories currently used in the region, or at least to an evaluation of their efficiency in achieving the goals of ecodiversity conservation. To have protected landscapes cared for bv the stakeholders themselves as stewards will finally dispel preconceptions that limit nature and culture in the Andes (Sarmiento, in press). Furthermore, it will provide an opportunity to acknowledge that these local communities created working landscapes reflecting traditional practices of stewardship. Whether the selected sites will showcase indigenous management, criollo achievements, or colono lifestyles, the role of humans in tropical mountain ecosystemsrecognized as a key to shaping biodiversity in the area (Ellenberg 1979)—is increasingly important to promote as a good conservation strategy.

Criteria for a Regional Approach

The Andes ecoregion harbors some of the most bioculturally diverse ecosystems in the world. It contains two recognized hotspots of biodiversity, two of the eight recognized centers of origin of major crops, 20 of the 36 World Heritage Sites in South America, and more than 205 languages (A. Argumedo, personal communication). The indigenous cultures have developed ingenious means for dealing with water stress and sloped terrain, as evidenced by the Pimampiro aqueduct in Ecuador; Cumbernayo the and Moche channels, the Puquios of Nasca, or the cochas de Liallahua in Peru; and the textiles of Atacama in Chile. A huge variety of plants has been domesticated, including anihua, kiwicha, tarwi, guinua, yacon, achira, racacha, olluco, mashua, oca, and potato. Ancient terraces found around Lake Titicaca, or the monoliths of the Tiawanaku plateau, are witness to the management of bounties long gone; even today, this great diversity is deteriorating rapidly in the face of global trends. Current conservation approaches in the region are deficient in that they have failed to comprehensively address socioeconomic, cultural, political, and institutional challenges for mountain sustainable development.

With this background, we note the challenges of developing the concept of the interrelationship between forms of diversity (whether biologically or culturally driven) amidst current trends of "setting aside" reserves for preservation of pristine nature. We will demonstrate that the role of humans as stewards of their lands is a prerequisite of the comprehension of the values of Andean cultural landscapes. We therefore, require a definition of the new Protected Landscape approach, stressing the highland/lowland interaction, the likelihood of long-lasting small-impact economic activities, and the legal base

for buffer zone management and core protection.

There are several criteria of stewardship that may be used to select cases in a regional approach. They include: (1) biological (e.g., large biota inventories), (2) physical (e.g., key environmental services such as water capture and soil degradation), (3) cultural (e.g., agricultural practices and religious considerations), (4) social (e.g., land tenure and class structure), and (5) economic (e.g., production modes and market strategies). Table 1 shows some of the indicators for landscape ecodiversity worth protecting.

Within the framework of Andean mountain situations, there is no single example which encompasses all the indicative factors for landscape stewardship. Here we try to cover the extent of the options, including references to specific sites along the cordilleras in several countries, each one emphasizing a particular criterion or a few criteria in working, living Andean landscapes.

Case Studies

A selection of case studies makes the point in favor of the protected landscape approach for conservation and development in traditional communities of the Andean mountains. We will proceed from north to south, explaining the significance and potential for demonstrating the validity of the concept with different scenarios that include tropical and temperate sites, highland and lowland montane environments, indigenous

Criterion	Indicators	
Heirloom plants/animals	Local varieties, rare recipes, seed stock, local races,	
(biological)	pets, and drait animals	
Holistic rearing	Not only agriculture, but livestock, root	
(cultural)	recollection, fruit and flowers, firewood, etc.	
Traditional production	Subsistence agriculture, staple products and local	
(economic)	specialties geared to the local market	
Water management	Successful irrigation processes and terracing or	
(physical)	other soil management practices	
Cultural boundaries	Seasonal utilization, transhumance and home-range	
(economic)	uses of potentially limiting activities	
Spiritual ecotones	Mental constructs—not physical lines but spiritual	
(cultural)	or intellectual reaches	
IUCN membership	Sponsorship of individuals' affiliation or NGO	
(social)	recognition in IUCN structure, mobility and	
	organizational frames	

Table 1. Some indicators of landscape ecodiversity.

and mestizo populations, and rural and urban settings.

Table 2 lists different prospective sites for an integrative protected landscape demonstration exercise. This should be considered a minimal sample for conveying the notion of landscape stewardship in the region. Due to the difficulty of finding one site that may be indicative of all factors, each site will focus on a special theme.

The Sierra Nevada de Santa Marta, Colombia. This massif constitutes traditional grounds for three different indigenous groups: the Wiwa, Arrumaco, and Kogi. The location of "Ciudad Perdida" in particular is a sacred place for the Kogi, who are now living around the archaeological site and are custodians of its maintenance as spiritual totem. The Tairona Indian builders of this impressive architectural wonder have disappeared. The area is already protected as a national park and UNESCO biosphere reserve. With its cultural patrimony, "Ciudad Perdida" is an important archaeological park. A comprehensive study has appeared as an atlas with general information on the massif. This is the highest coastal mountain on Earth, reaching from sea level to 5,755 m in only 42 km. A rapid ecological assessment (REA) has shown that 13 life zones are found within the 12,230 sq km that share the greater Magdalena River Basin.

The study would also reflect the "degree of criticality" to help define important areas in the Sierra Nevada de Santa Marta ("criticality" can be thought of as equaling "intrinsic quality" multiplied by "intervention condition"). All of the selected areas include indigenous settlements and interventions (Rodríguez 1999). A protected landscape category will bring to the forefront the important

Theme	Place	Facilitator
Indigenous management	Ciudad Perdida, Sierra Nevada de Santa Marta, Colombia	Guillermo Rodríguez
Production alternatives	The Quijos river valley, near Baeza, Ecuador	Jack Rodríguez
Highland tourism	Alto Cañete, Cochas Pachacayo, Huayhuash, Peru	Miriam Torres
Traditional agriculture	The Valley of the Kings, near Pisac, Peru	Alejandro Argumedo
Cultural heritage	Sajama community in the Sajama National Park, Puna of Bolivia	Mireya Muñoz

Table 2. Prospective sites for protected landscapes.

role of the ancient Tairona and the current Kogi and mestizo population in the area. Indigenous land management of the area, the seclusion of practices in sacred sites, as well as a comprehensive ethnobiological framework of Kogi livelihood make the case for an important contribution of the protected landscape concept in the northernmost Andean massif.

The Quijos River Valley, Ecuador. Amidst three important Ecuadorian protected areas (Sumaco-Galeras National Park, Antisana Ecological Reserve, and Cayambe-Coca Ecological Reserve), two fertile valleys run from the heights of the Antisana volcano to the foothills of the Andean crescent of the Amazon headwaters. The bulk of biodiversity housed in the tropical montane cloud forest belt is impressive in almost every respect. The area has been always an important mountain pass connecting the Amazon lowlands with the Andean highlands. An extensive network of pathways (or "culuncos") criss-crossed the area, connecting the Quijos Valley with other prehistoric and historic market centers, such as Pimampiro and Quito. With the arrival of the Spaniards, the region became the gateway to the Amazon after the Orellana expedition used this mountain pass to enter the mythical "El Dorado."

Colono lifestyle has changed the original landscape into a mosaic of pasturelands, croplands, and remnant

forest patches. Although the original Quijos Indians have disappeared, rich archaeological evidence abounds in the area. Baeza, in the heart of the Quijos Valley, is the only city towards the Ecuadorian Amazon territory that is designated as being included in "National Ecuador's Cultural Patrimony." The life of the mestizo along the Quijos River and of the Cofan Indians along the Oyacachi River also present important examples of traditional practices and alternative economic options in a working, living landscape (Sarmiento 1997).

Several cycles of economic ventures have come and gone within the matrix of the valley, each leaving behind degradation of the original forest composition and soil structure. The most recent fashions, fishing in mountain waters and ecotourism (including whitewater rafting), pose a challenge for finding an appropriate administrative framework for conservation and development in the area.

The Valley of the Kings, near Pisac, Peru. The magnificent Andean civilization of the Inca empire is vividly portrayed today in the traditional village of Pisac, where the architecture and the surrounding terraced terrain set the stage for a continuation of simple agricultural practices and communal living. The protected landscape category at Pisac, close to the imperial capital of Cusco in highland Peru, will acknowledge

the intimate links embodied by a natural capital rich in evidence of ancient human impact. UNESCO recognized the important of the area as World Cultural Heritage Site, but reference is made only to the colonial city without considering the surrounding Pisac valley, the breadbasket of the Inca empire.

Local communities have developed communal strategies for agricultural production and irrigation so as to develop a highly sophisticated system of seasonally effective production mechanisms. Also, altitudinal adaptation to the "verticality" of Andean landscapes is practiced around the area by using several different crops according to the elevation and month of the year.

Agrodiversity, or the variety of cultivars and heirlooms, is also maximized in the protected landscape approach. This is something that Andean indigenous peoples have been doing all along; for example, the campesinos of Quechua descent have been stewards for several centuries (A. Argumedo, personal communication).

Alto Cañete-Cochas Pachacayo, near Junín, Peru. The cordillera of Huayhuash in highland Peru is often mentioned as one of the focal points for mountain tourism and ecotourism (Torres 1999). As in Huascarán National Park, increasing pressure from hikers, bird-watchers, and climbers put stress on the natural resource base. Further to the south, lying between the departments of Lima and Junín, another important tourist destination is emerging. The Alto Cañete and the Cochas Pachacayo are areas of important potential. Here, for the first time in the history of Peru, eight local indigenous communities have organized themselves into the "Agriculture Association of Social Interest" (SAIS) to create a new reserved zone in Alto Cañete and Cochas Pachacayo, where the national government entrusted the indigenous leaders, who own the land, with the creation and management of a protected area. The search for an appropriate designation will likely take place within the context of the protected landscape approach.

Peru already has legislation enabling the establishment of a Category V area through the so-called "reserva paisajística." However, a closer view of the area reveals not only the scenic beauty of a natural monument, but important agricultural biodiversity, forest cover, water supply, and cultural heritage issues. This designation of a reserva paisajística opens more opportunities for private investment in protected area management. In the past, this was done by using a "basket" category of multiple use particularly oriented to conflict management and greater success in conservation.

The communities of the Sajama Volcano, Bolivia. Sajama National Park in Bolivia encompasses 200,000

ha. As one of the first Bolivian protected areas, the Sajama volcano (6,540 m) and its zone of influence show a strong orientation toward biological conservation of the last remnants of *Polylepis* woodlands in the so-called highest forests on Earth, with trees growing at 4,700 m.

However, with the presence of a combination of important archaeological sites, some burial monuments, several "chullpas" and many "apachetas" that are typical of the Andean tradition of crossing the continental divide via highland trade routes, the Sajama Volcano (which itself is considered a deity, or *Apu*, by the indigenous population) holds a high amount of cultural and religious significance. Associations with the landscape include sacred places, rituals, and age-old beliefs that have evolved into organic cultural landscapes with implications for local and regional trade and transit of goods through the newly constructed highway in Sajama National Park.

The Bolivian highland of the Sajama also readily qualifies for the protected landscape approach. Not only have humans been affecting the area for centuries, but they have forged associated management schemes such that the current phenology of the national park is very much a response to ancient and current land use practices.

The Next Steps

All of these examples fully comply with the tests of integrity and authenticity suggested in the operational guidelines of the World Heritage Convention of 1992, as ratified in successive experts' meetings in La Petit Pierre (France), Schorfheide/ Templin (Germany), and Amsterdam (The Netherlands). The framework of cultural landscapes in the Andes was discussed at a 1998 UNESCO-sponsored meeting held at Arequipa/Chevay in Peru's Colca Valley. The next step will be to design a truly regional approach that includes both the biological and the cultural—and even the spiritual. We are proposing that the condor be adopted as the project's "biological flagship," and Wiracocha, a mythical pre-Hispanic wise man, as its "mythological flagship." We can help establish a system of protected cultural landscapes throughout the region by adopting the "Condor Route" (La Ruta Cóndor) and the "Wiracocha Route" (La Ruta de Wiracocha) as a lead-in to the project. With this concept in mind, additional areas already listed as potential cultural landscapes (either designed, living, relict or fossil, or associative) could be incorporated to obtain an optimal representation in the regional spectrum. These sites include the Páramos of Mérida in Venezuela; the cacao haciendas in Venezuela: the páramos of Antisana in Ecuador; the

Cordillera of Huascarán and the Lomas de Antiquipa in Peru; Aquina, Toconce, and San Pedro de Atacama in northern Chile; and the Isla Navarino in the extreme south of Chile (Mujica 1998).

The Cóndor/Wiracocha Route

Until quite recently, national approaches towards protected area management in the region adopted the national park model. The preservation of large areas of "unspoiled nature" through ownership of land have often excluded local peoples from planning and implementation processes. The use of Western conservation science and practices and the involvement of formally trained experts have been emphasized, while the valuable knowledge and practices of indigenous peoples have largely been ignored in the process. Paraphrasing IUCN's Protected Areas Program, "a 'protectionist' mentality persists in the management of protected areas in South America, and successful work with local communities has seldom been achieved. Systematic methodologies to bring about the efficient participation of local people have not yet been developed." The "Ruta Cóndor/Wiracocha," as described below, presents a new paradigm, one in which local indigenous communities form the core of protected area establishment and management in a regime which aims to conserve biological and cultural

diversity through a more integrative approach.

Building on this momentum, a network of indigenous peoples from seven countries is developing an innovative approach to the conservation of Andean cultural landscapes. The "Ruta Cóndor/Wiracocha" proposes a community based management regime in the Andean mountain ecosystems intended to regenerate and conserve its cultural and biological diversity. By moving from strict nature protection to multipurpose protection that embraces nature, culture, spiritual place, historical sites, and centers of diversification of native crops, the foundations for sustainable, bioculturally rich Andean landscapes can be built.

Incorporating the diverse ecosystems of the Andes, which are linked through historic and ecological attributes, an international route extending from Venezuela to Chile, covering the historic pre-Hispanic Andean space based on the ancient Wiracocha Route, is being developed. (La Ruta de Wiracocha was a pre-Hispanic route which linked culturally and biologically important points, including sacred sites, cities, areas of high biodiversity, ceremonial centers, and so forth. It was devised by Wiracocha, a mythical wise man, who used Andean scientific principles to establish a line which expanded from Colombia to Argentina.) The route will follow a network

of traditional-agriculture protected landscapes throughout the Andes, to be established following IUCN Category V principles. These traditionalagriculture landscapes will link focal points along the route. For purposes of this project, "focal points" have been defined as being nodal conservation areas which have already been established as well as other bioculturally rich areas that require conservation. The Ruta Cóndor/Wiracocha's focal points will include, among others:

- Micro-centers of crop origin and diversity (particularly Vavilov centers and areas of crop diversity);
- Areas of high biological diversity (including hot spots, critical, and vulnerable areas);
- Outstanding mountain ecosystems (including high-mountain wetlands, native forests, and grasslands);
- Cultural areas (including sacred sites, archaeological centers, World Heritage Sites, and other cultural landmarks such as places where there is a strong craft tradition, e.g., pottery and weaving); and
- 5. Protected areas (including national parks, nature reserves, biosphere reserves, etc).

The "Ruta Cóndor/Wiracocha" will be implemented and managed by

indigenous communities themselves. Agricultural protected landscapes and new focal points making up the route will be managed adaptively, based on the traditions and knowledge of the native peoples. Linkages with the already established focal points will be done in collaboration with conservation authorities in each particular country, and arrangements will include strategies to ensure effective participation of local people in the management of such areas.

The integrated ecosystem approach that will be employed is key to the effective conservation of each element in the route, since protection of biological and cultural diversity are interdependent. This holistic approach will provide an enabling environment for conservation and sustainable use of biological diversity, including the maintenance of ecosystem functioning and resilience, wildlife populations and habitats, and biological diversity important to food and agriculture, including landraces and wild relatives of domesticated plants and animals. The route would be free of genetically modified organisms (GMOs) in order to maintain the Andes as an important reserve of strategic plant genetic resources and to ensure critical ecological services for the region's increasing population.

The "Ruta Cóndor/Wiracocha" will link landscapes that developed organically and were intimately tied

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in the early history of the Andes. The Spanish invasion violated the harmony and connectivity of the landscape and marginalized the indigenous peoples who helped to create the region's richness and diversity. The "Ruta Cóndor/Wiracocha" is, therefore, an attempt to revitalize native peoples' common identity. To "Ruta Cónthis end, the dor/Wiracocha" will emphasize the incorporation of culturally important sites to help native peoples strengthen their cultural identity and sense of belonging. The incorporation of sacred sites is also important from a conservation standpoint, since they usually harbor high diversity as a result of long-standing traditional protection status.

The corridor framework is intended to empower local communities and indigenous peoples and support them in their conservation efforts by bringing them together in various forums to share experiences and ideas, obtain resources, and construct successful conservation initiatives. McNeely et al. (1994) identify strategic actions required to strengthen protected areas in South America, and these include the use of research and planning techniques and training programs that emphasize participatory processes, conflict resolution, and harmonization of interests. The "Ruta Cóndor/Wiracocha" strategy is based on these principles, and, given its geographic scope, will go a long

way in strengthening *in situ* conservation objectives in the continent. Additionally, the implementation of the route will provide an opportunity to native people in the Andes to work together to create opportunities to conserve, protect, and benefit from their knowledge, practices, and innovation systems. Issues of intellectual property and benefit-sharing will be therefore integral to the project.

The establishment of the "Ruta Cóndor/Wiracocha" will involve indigenous and traditional communities along the route, and will require and strive for effective mechanisms to coordinate actions and make decisions, collaborating with other conservation and development actors at the local and regional levels and from national and international sources. Direct participation and control of the project by the local communities will ensure that views of the indigenous peoples and their construction of local reality are the basis of the intervention. This will also guarantee that landscape conservation activities are tailored to local realities and enhances the project's chances of acceptance and success. The project strategy will promote the use of traditional knowledge, and will benefit from its shared ownership, adaptive nature, and Earth-based cosmovision. In addition, the "Ruta Cóndor/Wiracocha" initiative aims to influence regional protected area policy, especially where local com-

munities are concerned, and act as a catalyst for much-needed policy and institutional reforms.

The project will take proper account of the general goals of equity for and poverty reduction among the indigenous peoples along the "Ruta Cóndor/Wiracocha." An ecotourism and indigenous tourism plan will be developed to provide economic incentives for conservation, especially by adding value to local biodiversity and landscape features. Ecotourism activities will be promoted within the framework of the 2002 United Nations Year of the Mountains and of Ecotourism.

The "Ruta Cóndor/Wiracocha" initiative is an important first step in dealing with various complex problems that indigenous peoples face in their efforts to co-exist as traditional societies in the fast-paced global community. The project will serve as a model for locally driven sustainable development in the region and on the global scale, ensuring appropriate community development processes and the sustainable management of mountain resources. This is the first case in the region of a protected landscape initiative of such scale established by indigenous peoples, and is likely the first initiative of its kind in the world.

Conclusion

The Andean initiative of the "Ruta Cóndor/Wiracocha" should be:

- 1. **Communicative,** in order to publicize Category V's potential among community organizations, environmental NGOs, local and national governments, and international agencies;
- Inclusive, by having a national consultation on the topic, bringing together both the grassroots organizations and government officials;
- Participatory, by having a regional workshop on the topic that would include regional and national governments and community leaders;
- 4. **Epistemographic,** in order to clarify semantics and terminology of the dynamics of mountain ecosystems;
- 5. **Methodological,** to start building experience by documenting and publicizing previous works or pilot studies applicable to the concept of protected landscapes in the Andes ecoregion; and
- 6. **Transcendental**, to unify and invigorate local cultures.

If these six conditions are fulfilled, the "Ruta Cóndor/Wiracocha" will be a success story in the pilot effort for protected landscape conservation worldwide.

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Jessica Brown Brent Mitchell

The Stewardship Approach and its Relevance for Protected Landscapes

Introduction

Very country has landscapes that have been shaped by the interactions of people and nature over time. These landscapes are rich in traditional patterns of land use that have contributed to biodiversity and other natural values, have proven sustainable over centuries, and are living examples of cultural heritage. As countries worldwide move to expand and strengthen their national protected areas systems, greater attention must be paid to protecting working landscapes–places where people live and work.

Emerging trends in conservation and protected areas management set the stage for new approaches that engage local people in the stewardship of working landscapes and embrace the interactions of people and nature.

One trend is that conservation strategies are becoming increasingly bioregional. The field of conservation biology has highlighted the pressing need to work on the scale of ecosystems and the wider landscape to conserve biological diversity.

Another important change lies in how we view national parks and protected areas. Worldwide, there is growing recognition that protected areas can no longer be treated as islands, but must be seen in a larger context. In regions such as Latin America and the Caribbean the phenomenon of "paper parks" protected areas in name only—has demonstrated forcefully that approaches that rely solely on regulation and enforcement are costly and too often meet with failure. Protected area managers are turning instead to "inclusive" models, in which the interests of local communities are considered, resident populations are not displaced, and there is a high degree of local participation in planning and management of the protected area (Borrini-Feyerabend 1996).

A third trend lies in our growing understanding of the link between nature and culture: that healthy landscapes are shaped by human culture as well as the forces of nature, that rich biological diversity often coincides with cultural diversity, and that conservation cannot be undertaken without the involvement of those people closest to the resources.

Fundamental to these new direc-
tions in protected areas is the need to engage and support local people in the stewardship of their natural and cultural heritage.

The Stewardship Approach

Stewardship means, simply, people taking care of the Earth. In its broadest sense, it refers to the essential role individuals and communities play in the careful management of our common natural and cultural wealth, both now and for future generations. More specifically, it can be defined as efforts to create, nurture, and enable responsibility in landowners and resource users to manage and protect land and its natural and cultural heritage.

Stewardship taps our basic human impulse to care for our home and its surroundings—be it a parcel of land, a neighborhood, or a historic monument, or the larger area of a watershed, mountain range, or stretch of coastline. It builds on our sense of obligation to other people: our family, our community, and future generations. By fostering individual and community responsibility, the stewardship approach puts conservation in the hands of the people most affected by it.

Stewardship emphasizes the integration of people and nature, not the attempted isolation of one from the other. It recognizes that all landscapes are cultural, and that conservation needs can be addressed on land that cannot be removed from human existence and commerce.

Landscapes typically encompass a mosaic of land ownership: private, public and, in many countries, customary or communal ownership. The scenic, biological, and cultural qualities that make certain landscapes special are the result of the interactions of people and nature over time (Figure 1). It follows that protection of these landscapes inevitably must rely on fostering stewardship by those who own or live on the land. Experience with private land stewardship in North America-and, increasingly, in other regions of the world-offers an array of tools to conserve the natural and cultural values of landscapes.

Specific stewardship tools vary according to social, legal, ecological and institutional constraints, but all operate to encourage, enable, or formalize responsible management. Briefly, these techniques include environmental education, technical information, demonstration projects, recognition of achievement, certification, voluntary management agreements, subsidized management, deed restrictions, public-private partnerships in protected areas management, and outright acquisition of property by private organizations. These tools (with many others and more variations) represent a spectrum of options beginning with those that require little or no formal commitment or involvement and little per

LANDSCAPE STEWARDSHIP: NEW DIRECTIONS IN CONSERVATION OF NATURE AND CULTURE



Figure 1. Woodstock, Vermont, and Billings Farm (part of Marsh-Billings-Rockefeller National Historical Park), from the South Peak of Mount Tom. *Photo by Barbara Slaiby.*

capita investment (e.g., education) to more "permanent" and specific protections (e.g., easements and acquisition) (Mitchell and Brown 1998; Diehl and Barrett 1988; Endicott 1993; Hilts and Moull 1988).

Working Landscapes as Protected Areas: The Potential Role of Category V

While national parks and other strictly protected areas are essential, they alone cannot achieve biodiversity conservation objectives, nor can they encompass working landscapes. There is a pressing need for new models of protected areas that can respond to the pressures on these landscapes.

As Beresford and Phillips write in this issue, the protected landscape approach is central to a new paradigm for protected areas, one which is based on inclusive approaches, partnerships, and linkages. This approach can provide valuable models of how to integrate biodiversity conservation, cultural heritage protection, and sustainable use of resources.

According to the IUCN *Guide-lines for Protected Area Management Categories,* the definition of a Category V protected landscape/seascape is:

... an area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection and evolution of such area (IUCN 1994).

The protected landscape approach can be particularly appropriate in diverse regions of the world, including many places in the Americas, because it:

- Links people's needs and biodiversity conservation;
- Typically comprises a mosaic of land ownership patterns, including private and communally owned property;
- Can accommodate diverse management regimes, including customary laws governing resource management;
- Has important specific objectives related to conservation of cultural heritage;
- Seeks to bring benefits to local communities and contribute to their well-being through the provision of environmental goods and services; and
- Has proven to work well in certain indigenous territories where strict protected areas have failed, because it accommodates traditional uses and customary tools

for resource management.

The protected landscape approach engages local communities in stewardship of working landscapes because it:

- Reinforces local responsibility for resource management;
- Builds on existing institutional responsibilities; and
- Encourages flexible arrangements for management of resources, including collaborative management agreements and the range of private land stewardship tools (Brown 1999).

Opportunities to Establish Protected Landscapes in the Western Hemisphere

While Category V appears on lists of protected areas for most countries in the Americas, typically it has been applied to existing designations. Until recently, there has not been a consistent effort to embrace the principles outlined above. A number of recent developments present new opportunities for establishing protected landscapes, as demonstrated by recent progress in Latin America and the Caribbean, as well as in North America.

In the USA and Canada, many protected areas have been recognized as meeting the criteria for management as Category V protected landscapes. Sites as diverse as Point Reyes National Seashore, Cuyahoga Valley

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National Recreation Area, Roosevelt International Park, and parts of Denali National Park are considered Category V protected landscapes. Most areas are managed by government agencies, though a few are nontraditional in structure, such as the St. Croix Waterway Heritage River.

However, exciting opportunities for the protected landscape approach are being created by new models of partnerships. In public-private northeastern North America these include heritage areas, such as the Champlain-Richelieu developing Valley International Heritage Corridor (New York, Vermont, and Quebec); greenways, such as the Hudson River Valley Greenway (New York); and large-scale cooperative management projects, such as the Silvio O. Conte National Fish and Wildlife Refuge (Connecticut, Massachusetts, New Hampshire, and Vermont). The new Atlas Timberlands Project (Vermont) is an example of how nongovernmental organizations (NGOs), timber companies, and public agencies can cooperate to sustain and better manage a working forest.

In Mexico, "zones subject to ecological conservation" are currently listed as meeting protected landscape criteria, while biosphere reserves are considered Category VI resource management areas.

In several countries of Latin America, NGOs are advocating the use of protected landscapes and are pushing for supportive legislation. For example, Peru has just adopted new legislation to include Category V in its protected areas systems. The recent enactment of legislation for private reserves in many Latin American countries further sets the stage because, in cases like Colombia, it explicitly recognizes the conservation efforts of NGOs and communities, and the traditional uses of natural resources that protect and enhance biological diversity (Higgins and Nieto 1996). Finally, a number of countries are considering reclassification of national parks as a means of addressing conflicts with resident populations.

In Andean South America (Figure 2), new sites are being proposed as protected landscapes. At a recent UNESCO-World Heritage Convention meeting held in Arequipa, Peru, fifteen cultural landscapes in the Andes were nominated for protection. Among the candidates in Peru are Urabamba (a sacred valley of the Incas) and the Cordillera de Huayhuash in the central sierra of Peru. In Ecuador there is growing interest, at local and national levels, in declaring the Quijos River Valley the country's first protected landscape. Its designation would create a natural corridor among three important protected areas, consolidating them into Ecuador's largest protected area and fostering conservation at an ecoregional



LANDSCAPE STEWARDSHIP: NEW DIRECTIONS IN CONSERVATION OF NATURE AND CULTURE

Figure 2. The cultural landscapes of the Andes have been shaped by traditional patterns of grazing and cultivation. *Photo by Jessica L. Brown.*

scale (Sarmiento 1997; Sarmiento et al., this issue).

The emergence of networks of private reserves in many countries of Latin America (e.g., Costa Rica, Colombia, Ecuador, Chile and Brazil) is one important way in which the stewardship approach is being applied. While relatively recent in their inception, private reserves are already making significant contributions to conserving cultural and natural heritage, and the movement is gaining momentum. This development holds great potential for protecting working landscapes in the region.

A number of countries in the Eastern Caribbean, such as St. Lucia and the British Virgin Islands, are beginning to include Category V protected landscapes in their systems of protected areas. National trusts in these countries have found that the model is highly appropriate for small, intensively settled island countries, where the landscapes reflect human interactions over time, much land is privately owned, and the pattern of ownership necessitates innovative management arrangements (see the paper by Romulus and Lucas in this issue).

Challenges

Among the challenges to protecting working landscapes in the Americas, a basic one is unfamiliarity with designations such as Category V, which is currently not well represented in most national protected area systems. In many countries, particularly in regions such as Latin America and the Caribbean, the complexity of land use, tenure, and institutional roles can make it hard to work at the scale of landscapes. A key challenge lies in coordinating the efforts of diverse actors, all using different mechanisms, to achieve biodiversity conservation goals at the scale of bioregions.

The extraordinary growth of private land conservation throughout the Americas and in other regions of the world holds much promise for working protecting landscapes. However, there is a need to develop further the criteria and management guidelines for private reserves at a regional level. Legal and institutional mechanisms must be in place to encourage and ensure management agreements. Long-term provision for management and monitoring will be essential to assure adherence to agreements, as well as to evaluate the effectiveness of different approaches.

These and other challenges to developing stewardship initiatives (in any context) are summarized in Box 1.

Conclusions

Landscapes are dynamic and change along with the communities living in them. As Adrian Phillips of the IUCN World Commission on Protected Areas has observed, this dynamism poses a central dilemma in landscape protection. "It is not

Box 1. Challenges to developing stewardship of landscapes.

The definition of protected landscapes, with its emphasis on the interaction of people and nature over time, implies that people living in the landscape act as its stewards. In a changing world, new tools are needed to support and ensure stewardship of natural and cultural heritage in keeping with conservation goals. Stewardship techniques offer great potential to strengthen and extend the impact of conventional protected areas. Challenges to developing stewardship initiatives include:

- **Creating a legal framework conducive to private initiatives.** Incentives (e.g., tax advantages) for conservation and best management practices on private lands must be incorporated into national legislation. Even voluntary and non-binding tools often benefit from governmental recognition. As key actors in stewardship, NGOs require a stable legal basis for establishment and legitimacy as an important sector in civil society.
- Developing legal and institutional mechanisms to ensure "conservation in perpetuity." Long-term provision for management and monitoring will be essential to assure adherence to agreements, as well as to evaluate the effectiveness of different approaches.
- Creating the climate for productive, enduring partnerships among sectors. Government agencies charged with protected areas management must have the flexibility to develop appropriate partnerships with NGOs and other private interests. To create an atmosphere of trust and cooperation, government must view these NGOs as true partners, rather than subcontractors; NGOs must be willing to engage in non-adversarial relationships with government; all parties must be committed to ongoing communication and coordination of efforts.
- Integrating stewardship into land-use planning and protected areas management. Private stewardship efforts, however extensive, are no substitute for a strong government role in land-use planning and protection of natural areas. These efforts should reinforce land-use planning and policy at all levels. At the same time, private initiatives should be viewed not as an afterthought, but as central to meeting protection and management objectives. To this end, coordination among private and public actors is essential.
- Ensuring participation by all interested parties. Stewardship relies on public support and participation. Whether through landowner contact or public forums, opportunities must be created for those most affected by land-use decisions to voice their concerns. Value must be placed on local knowledge and traditional resource management systems. Opportunities for collaborative management should be explored.
- Marshaling the necessary resources. Funding is necessary for land acquisition and compensation for certain development rights or uses. Often NGOs are in a strong position to raise private funds for these purposes. Fiscal incentives, such as reduced property taxes, may carry a cost in terms of lost revenues to municipalities.
- Striking a balance between responding to opportunities and taking a strategic approach. To maintain the ecological integrity of landscapes and protect representative ecosystems requires strategic approaches. A key challenge lies in coordinating the efforts of diverse actors, all using different mechanisms, to achieve biodiversity conservation goals at the scale of bioregions. While responding to protection opportunities as they arise, local stewardship initiatives must also be proactive, addressing emerging trends in land use, such as reprivatization or increased development pressure.

enough therefore to attempt to protect the landscape as such: attention must be given to the ways of life of those who are architects of the landscape and upon whom the survival of the biodiversity within it depends." Protection should seek not to "fossilize the ways in which communities use the land, but rather to encourage sustainable approaches to land use and development" (Phillips 1997).

Any strategy for protection of working landscapes will require tools, adapted to the special characteristics of the local and national context, which can be applied across a mosaic of land ownership and use patterns. It will respect the land and resource rights of indigenous and other traditional peoples. It will rely on approaches that engage local residents and communities, and build on long traditions of caring for natural and cultural heritage.

The stewardship approach offers tremendous potential for sustaining special landscapes in diverse regions of the world.

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6

Prioritizing the Research and Monitoring Needs of Terrestrial Mammals in National Parks

Introduction

ational parks play an extremely important role in the preservation of many species of animals. Wright (1992) estimated that between one-third and one-half of the rare and endangered species in the USA are found in the National Park System. Wildlife managers in national parks face significant challenges and opportunities in the stewardship of wildlife resources for present and future generations.

Wildlife management priorities in the U.S. national parks have traditionally focused on the protection and enhancement of "glamorous" species, typically ungulates. Over 36% of all research, management studies, and management actions on birds and mammals in the national parks have involved ungulates, principally Rocky Mountain elk (Cervus elaphus), white-tailed deer (Odocoi*leus virginianus*). mule deer (Odocoileus hemionus), mountain goats (Oreamnos americanus), and bighorn sheep (Ovis canadensis) (Wright 1990).

The ten most-studied mammals—typically those that are the most visible, of greatest visitor interest, or that adversely affect park plant communities—account for over 41% of all studies (Wright 1990; Wright 1992). This narrow focus has resulted in a corresponding neglect in the study of many other wildlife species.

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The National Park Service (NPS) has recognized the need to develop a nationwide program to inventory and monitor the status of natural resources in national park units (Silsbee and Peterson 1991). However, while some monitoring data are available at the park level, this information is seldom synthesized at the national level. The lack of a broad picture of resource status and trends hinders the development of management priorities at the regional or national level. Public attitudes, more than actual need, often dictate resource management actions and funding priorities (Elfring 1985).

This situation suggests the need for a better way to objectively and consistently allocate available resources: focusing attention on those that have received little management or research attention, but which may be valuable components of the park ecosystem.

Several different ranking systems have been developed by nongame biologists and ecologists to set priorities for conservation of wildlife species (e.g., Sparrowe and Wight 1975; Thompson 1984; Horak et al. 1992; Burke and Humphrey 1987; Niemi 1982; Mace and Lande 1991; Wood and Slater 1983; Millsap et al. 1990). Ranking systems have been used by state wildlife agencies to prioritize the limited amount of funding available for nongame species and to identify threatened and endangered species that are in need of active conservation measures.

The overall goal of this study was to develop a defensible methodology for establishing research and management priorities for terrestrial mammal species. Priorities are based on the biological vulnerability of a species, the current state of knowledge of its population status, and the extent of its management and research needs within a national park unit.

Methods

Development of the ranking system. We modified the ranking system developed by Millsap et al. (1990), and made it specific to national parks and the mammal species of concern by using components and ideas from other ranking systems (Sparrowe and Wight 1975; Thompson 1984; Wood and Slater 1983; Burke and Humphrey 1987). This system is based on two categories of variables: biological and parkspecific. Point values, ranging from 0 to 10 were assigned for each variable and represented the range of variation.

Categories were created for each variable that described the range of variation within it. Points were assigned to each category within each variable. The point values of a variable ranged between 0 and 10 points. Point values followed Millsap et. al. (1990) except where categories were altered to fit the needs of this project. Categories were altered to make them specific to terrestrial mammal species. In these cases, point values were assigned by averaging the point values of the two combined categories or by creating an even spread from 0 to 10 based on the number of categories.

Biological variables. Seven variables were selected to measure characteristics of a species population status or life history, and thus its vulnerability to extinction across its entire geographic range. The contribution of each variable as a measure of biological vulnerability is supported by published wildlife literature (Table 1).

The biological variables (population size, population trend, range size, distribution trend, population concentration, reproductive potential for recovery, and ecological specialization) and the point values assigned to each are shown in Table 2. The biological score for each species is the total of all variable points.

Park-specific variables. Seven park-specific variables were selected to provide a relative measure of the

Biological variable	Literature review
1. Population size	Important element in endangered species priority
	systems (Sparrowe and Wight 1975; Wood and
	Slater 1983), supported by studies in population
	genetics (Kimura and Ohta 1971)
2. Population trend	Important element in endangered species priority
	systems (Sparrowe and Wight 1975)
3. Range size	Important element in endangered species priority
	systems (Sparrowe and Wight 1975); species
	with restricted distribution may be predisposed
	to endangerment (Robinson and Bolen 1989)
4. Distribution trend	Important element in endangered species priority
	systems (Sparrowe and Wight 1975); species that
	were widespread in extent but are now local in
	their distribution pattern may not persist (Jones
5. Population	Life history attribute; broad geographic
concentration	distribution increases resilience to change and
	allows for local catastrophic events to occur
	without significantly inreatening the total
6 Deproductive	population (Salwasser 1988)
o. Reproductive	determined by litter size, number of litters per
potential for recovery	ver and minimum broading ages of individuals
	in the population (Desmann 1964): most
	and angered species are k selected (Debinson and
	Rolon 1020)
7 Ecological	Life history attribute: specialized species are
specialization	sensitive to changes in the environment and
specialization	specialized adaptations may limit their ability to
	readily adjust (Bailey 1984), species with highly
	specialized physical behavioral or physiological
	adaptations may be predisposed to
	endangerment (Robinson and Bolen 1989)

 Table 1. Biological variables chosen for inclusion in the ranking process (with supporting literature citations).

status of each species population within a given park by examining the extent of protection afforded each

one from harvest and the status of ongoing research and management efforts targeted at them (Table 3).

Table 2. Biological	variables,	categories	within	variables,	and s	scores i	used in	
ranking species.	All variable	es are based	រ on the	entire gec	ograph	lic range	e of the	1
species.								
							-	_

	Point value
 Population size: The estimated number of adults throughout the range of the species. (a) Extremely rare (0-500 individuals) 	10
(b) Rare (501-1,000 individuals, or unknown but suspected to be small) (c) Uncommon (1,001-10,000 individuals, or unknown but suspected to be uncommon, yet not rare)	8 5
 (d) Common (10,001-50,000 individuals, or unknown but suspected to be large) (a) Abundant (, E0,000 individuals) 	2
(e) Abundant (>50,000 individuals)	U
 2. Population trend: The overall trend in the number of individuals throughout the species' range over the last two decades (or other appropriate interval considering species generation time). If population trend is unknown, consider trends in the availability and condition of the species' habitat as indicative of population trend. (a) Population known to be decreasing 	10
 (b) Trend unknown, but population suspected to be decreasing (c) Population formerly experienced serious declines, but presently stable and increasing 	8
(d) Population stable, or suspected to be stable or increasing (e) Population known to be increasing	2
3. Range size: The size of the area over which the species is distributed during the season when distribution is most restricted (e.g., for a species that ranges over several thousand sq km in summer and winters over several hundred sq km, use the winter range).	
(a) <100 sq km (b) 101-1,000 sq km (c) 1,001-40,000 sq km (up to 25% the area of Florida) (d) 40,001 100,000 sq km (up to 25% the area of Florida)	10 9 7
(a) $40,001-100,000$ sq km (up to 75% the area of Florida) (e) $100,001-2,000,000$ sq km (up to 25% the area of the continental USA) (f) >2,000,000 sq km	1 0
4. Distribution trend: Percent change (since European settlement) in the area occupied by the species. (This is an estimate of change in the portion of the total range that is occupied or utilized; it may not equal the change in total range.)	
 (a) Area occupied has declined very significantly (90-100%) (b) Area occupied has declined significantly (75-89%) (c) Area occupied has declined moderately (25-74%) 	10 8 5
(d) Area occupied has declined very little (1-24%) (e) Area occupied is stable or has increased	2
5. Population concentration: The degree to which individuals within	
populations congregate or aggregate seasonally.	40
(a) Majority concentrates at a single location (b) Concentrates at 1, 25 locations	
(c) Concentrates at >25 locations	9
(d) Dooc not concentrate	

Table 2 (continued)	
 Reproductive potential for recovery. The ability of the species to recover from serious declines in population size 	
(A) Average number of young produced per adult female per year	
(a) <2 offspring (b) 2.5 offspring	5
(c) 6-10 offspring	3 1
(d) >10 offspring	Ō
(B) Minimum age at which females twically first reproduce	
(b) minimum age at which remains typically in strept buttle (a) >5 years of age	5
(b) 3-5 years of age	3
(c) 1-2 years of age	1
(d) <1 year of age	0
7. Ecological specialization: The degree to which the species is dependent	
upon certain environmental factors (e.g., strict requirements for	
nibernacula, dietary specialist, specific denning sites, reproductive	
specialization) (a) Highly specialized (requires three or more specializations)	10
(a) Finging specialized (requires the of more specializations) (b) Moderately specialized (requires two specializations)	10
(c) I imited specialized (requires one specializations)	3
(d) Not specialized	Ő

Table 3. Park-specific variables, categories within variables, and scores used in ranking species.

	Point value
 1. Percent of the species' total range that occurs in the national park. (Select the category that best applies.) (a) 40-100% (b) 20-39% (c) 10-19% (d) 2-9% (e) <2% 	10 7 4 2 0
 2. Trend in the species' population within the national park or in the immediate surrounding area. (Select the category that best applies.) (a) Known to be declining (b) Trend unknown or suspecting to be declining (c) Stable or increasing overall, but declining in some areas (d) Formerly experienced serious declines but is presently stable or increasing (e) Stable or suspected to be stable or increasing (f) Known to be increasing 	10 8 6 4 2 0
 3. Knowledge of distribution in the national park (survey score). (a) Distribution is largely unknown (b) Broad range limits or habitat associations are known, but local occurrence cannot be accurately predicted (c) Distribution is well-known and occurrence can be accurately predicted throughout the range 	10 5 0

Table 3 (continued)	
4. Knowledge of the national park population's size and distribution	
(survey score).	
(a) Factors affecting population size and distribution are unknown or	10
unsubstantiated	
(b) Some factors affecting population size and distribution are known	5
(c) All major factors affecting population size and distribution are known	0
5. Ongoing management and research activities in the national park	
(management score).	
(a) No past or present research or management	10
(b) Limited management, but no research or feedback	7
(c) Limited research, limited management	5
(d) Extensively managed, but little research or feedback	2
(e) Extensively researched and managed	0
6. Knowledge of population trend within the national park (monitoring	
score).	
(a) Not currently monitored	10
(b) Monitored locally	7
(c) Extensive monitoring, but without statistical sensitivity	4
(d) Extensive monitoring with statistical sensitivity	0
7. Harvest of the species in areas immediately adjacent to the national	
park's boundaries. (Select the category that best applies.)	
(a) Harvested, with no legal protection	10
(b) No substantial harvest other than accidental take or harvest of	7
nuisance animals; no legal protection	
(c) Harvested, but harvest regulated	4
(d) Harvesting prohibited by regulation	0

The park-specific value for each species is the total of all the variable points. High park-specific values denote species about which little is known in a particular park, and which may therefore be in need of research or management measures.

Testing the methodology. The biological and park-specific variables were evaluated by external reviewers. The accuracy of the biological and park-specific point values assigned to each species was verified by applying the system to mammal species within two national parks, Glacier and Olympic. The parks were chosen to

test the system based on their size, location, and the diversity of mammal species in them. Glacier National Park is currently inhabited by 60 terrestrial mammal species, 54 of which are non-volant. Glacier has maintained a natural sciences research program since 1967 (Coen 1992). Olympic National Park is currently inhabited by 49 non-volant terrestrial mammal species. Both parks are home to carnivore species that are either threatened, endangered, or of other special concern.

Biological information for many wildlife species is lacking because of

limited funds and because of their being difficult to study in natural surroundings. Three options exist for dealing with insufficient biological or park-specific information: (1) delete poorly known species from the database, (2) consider all poorly known species to be either imperiled or secure until their status is known, or (3) substitute opinions of knowledgeable researchers for missing data (Millsap et al. 1990). Options 1 and 3 were used in this study. All species of the family Chiroptera occurring at Glacier and Olympic were originally included in this database but later eliminated when reliable biological information could not be obtained from researchers. Option 3 was employed in all other cases where necessary.

Biological information on species obtained through literature research and from interviews was reviewed by individual biologists knowledgeable about those species. Park-specific information on the current status of species in the two parks was obtained from a literature search and correspondence with selected biologists. Two biologists from each park were asked to assign point values to park-specific variables for the species in that park.

Scores for research and management variables were combined and compared with biological scores, providing a means of delineating research and management priorities; the same was done for scores for survey and monitoring variables. A Mann-Whitney U Test was used to determine differences between reviewers' responses on point values assigned for park-specific variables.

To examine the accuracy of the ranking system, we compared our scores with those of species ranked by the Natural Heritage Program, U.S. Fish and Wildlife Service (USFWS), and U.S. Forest Service (USFS).

Results

Glacier National Park. Fifty-four mammal species were scored at Glacier. Biological scores ranged from 28 (out of a potential maximum of 70) for grizzly bear *(Ursus arctos)* to 2 for meadow vole (Microtus pennsylvanicus). Park-specific scores ranged from 58 (potential maximum of 70) for porcupine (Erethizon dorsatum) to 19 for gray wolf (Canis *lupus).* The species with one of the highest biological scores—and the highest score for biological and parkspecific variables combined—was fisher (*Martes pennanti*), followed by lynx (Lynx canadensis), wolverine (Gulo gulo), and northern flying squirrel (Glaucomys sabrinus) (Table 4).

Comparisons of the two reviewers at Glacier revealed no significant difference on mean scores assigned to species for park-specific variables concerning park range, survey, research, management, monitoring, and harvest. There was a significant difference between reviewers for mean scores assigned to species when scoring park population trend (U = 176.5; p = .000396). Data were

Species	Biological score	Park-specific score	Cumulative score
fisher	23	52	75
lynx	21	52	73
wolverine	25	42	67
northern flying squirrel	26	36	62
mountain lion	25	33	58
grizzly bear	28	26	54
northern bog lemming	20	34	54
bighorn sheep	20	33	53
marten	25	26	51
gray wolf	24	19	43

Table 4. The ten most vulnerabl	le mammal species	in Glacier	National I	Park. (Se	ee
Garrett 1995 for total scores	for mammal species	s, excluding	g Chiropter	a.)	

analyzed eliminating park population trend in the park-specific score total because of the variance introduced between reviewers. Determination of species with high biological scores (>19 points), research scores of 10 (limiting factors unknown), and park-specific scores (without park trend) above the mean of 35.8 yielded two species: fisher and lynx. By excluding park population trend from this categorization, the variance introduced between reviewers was eliminated.

Species occurring at Glacier that are listed by USFWS and USFS include the gray wolf (endangered), grizzly bear (threatened), fisher (sensitive), wolverine (sensitive), northern bog lemming *(Synaptomys borealis,* sensitive), and lynx (sensitive). Mean biological scores for unlisted species versus sensitive species differed significantly (U = 11.5; p = .003713). Park-specific scores for unlisted versus sensitive species did not differ significantly (U = 71.5; p = .40).

Plots of unlisted versus listed species revealed (1) an increase in mean biological scores from unlisted species to listed species; and (2) a decrease in park-specific scores for unlisted species through endangered species. A comparison of mammal species ranked by the Montana Natural Heritage Program and the mean biological score in this study indicated a general trend of decreasing biological scores from species that are critically imperiled to demonstrably secure.

Olympic National Park. Fortynine mammal species at Olympic were assigned scores for biological and park-specific variables. Biological scores ranged from 26 (out of a potential maximum of 70) for northern flying squirrel to 2 for Norway rat *(Rattus norvegicus),* forest deer mouse *(Peromyscus oreas),* and southern red-backed vole *(Clethrion*- omys gapperi). Park-specific scores ranged from 58 (potential maximum of 70) for coyote (Canis latrans) to 26 for black-tailed deer (Odocoileus hemionus) and mountain goat (Oreamnos americanus). Species with the highest biological scores at Olympic are shown in Table 5. Individual species with the highest scores for biological and park-specific variables combined included marten (Martes americana; 79), mountain beaver (Aplodontia rufa; 77), northern flying squirrel (76) and mountain lion (Felis concolor, 68).

Comparisons of the two reviewers at Olympic revealed no significant difference on the following park-specific variables: park range, park trend, research, management, monitoring, and harvest. There was a significant difference between reviewers when scoring the variable survey (U = 118, p = .000034).

Discussion

Our ranking system correctly identified those same forest carnivore species that have been recognized by many researchers as being in need of research and management. Fishers are extirpated over much of their former range in the USA and eastern Canada (Dodge 1977). Many western populations have failed to recover despite decades of reintroductions (e.g., Oregon), protection from trapping (e.g., in the northern Sierra Nevada, Olympic Peninsula), or both (Ruggiero et al. 1994). The lynx was listed as threatened in Washington in October 1993 (Washington Department of Wildlife 1993) and USFS considers the lynx to be a sensitive species (Ruggiero et al. 1994). The American marten has a smaller distribution now than in presettlement historical times, and the total area of its geographic range appears to be at a historical low (Gibilisco 1994).

Species	Biological score	Park-specific score	Cumulative score
marten	22	57	79
mountain beaver	20	57	77
northern flying squirrel	26	50	76
mountain lion	25	43	68
fisher	20	48	68
black bear	16	49	65
beaver	15	47	62
Olympic marmot	22	33	55
Roosevelt elk	15	34	49
mountain goat	16	26	42

 Table 5. The ten most vulnerable mammal species in Olympic National Park. (See Garrett 1995 for total scores for mammal species, excluding Chiroptera.)

Forest carnivore species are potentially sensitive to the effects of forest management because of their relatively large area requirements, their association with late-successional forests, and the relative lack of information available for conservation planning (Ruggiero et al. 1994). In addition, most of the geographic ranges of forest carnivores (about 65% for the marten and fisher) are found on public lands. The marten, fisher, and lynx have been judged to be at medium-to-high viability risk due to the reduction of old-growth forests in the Pacific Northwest (Thomas et al. 1993). These species would score high in any park where they occurred.

Using the data from Glacier, biological scores in the ranking system were validated by determining its ability to correctly identify federally listed species. Mean biological scores differed significantly for unlisted versus sensitive species, indicating that our ranking system could identify species listed as sensitive by others.

Plots of unlisted versus listed species indicated (1) higher biological vulnerability in listed species and (2) greater knowledge of endangered and threatened species within the national park, which reflects higher funding allocations for work on endangered species. A comparison of mean biological scores derived from our ranking system at Glacier compared with those of the Montana Natural Heritage Program indicated that our ranking system has accurately portrayed the relative status of species.

Research and management activities related to park resource objectives would be greatly enhanced by a database which could be used as the basis for a program to survey and monitor mammal species of the park (Beiswenger 1990). Our ranking system, developed specifically for setting priorities for mammal species in national parks, will assist biologists in determining where research, inventory, and monitoring monies should be allocated, and could be applied to other parks.

Species rankings based on variable scores are only as reliable as the data from which they are derived. Unfortunately, biological data for some species are inadequate and park-specific information on many species is sketchy at best. Our ranking system is an attempt to prioritize mammal species so that management and funding decisions can be made based on actual need within a national park, rather than on changing public attitudes. These decisions must and will be made whether concrete information is available or not.

Our ranking system will only be useful if biologists involved with the particular specific parks being evaluated are willing to assist in assigning point values for park-specific variables. Reliable knowledge of parkspecific variables is critical to obtain reliable results and must be considered before a ranking system is initiated. Attributes of park biologists involved in the ranking process are important to consider as well. Reviewers often influence each other and this could affect results of the ranking process. Consultations between reviewers could be reflected in many species receiving similarly high scores, which would make prioritization difficult. Weighting of variables could be considered in future projects. A consensus of park biologists can be used to determine if weighting needs to be addressed, based on how each park-specific variable contributes to the ranking of species within a particular park.

Organizational steps involved in implementing our ranking system at NPS units would include:

- Assigning a coordinator to develop the biological database;
- Convening a panel of knowledgeable park biologists to assign point values to park-specific variables; and
- Continually updating variable scores as new information becomes available.

Our ranking system could be used to set specific objectives and measure progress within a wildlife program. An example of such an objective would be to lower, over a two-year period, the research score for fishers at Glacier to below 10 points. Progress towards this kind of objective can be measured, as more factors affecting population size and distribution become known. The ranking system is designed as an on-line computerized database that is dynamic, and periodic updates should be planned as new information becomes available.

Recommendations for further research include expanding the database of the ranking system to include all vertebrate taxa present in a particular national park. The ranking system variables would need modification in order to be applicable to all species, following the example of Millsap et al. (1990); however, results from a prioritized ranking of all species would be a valuable tool for all parks to maintain.

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Books in Brief

Reviewed by David Harmon

Thomas F. King, *Cultural Resource Laws & Practice: An Introductory Guide.* Walnut Creek, California: AltaMira Press, 1998. 303 pp.

King, a well-known consultant in cultural resource matters, has delivered on his title: this book is a good introduction to the maze of laws and regulations that affect the management of cultural resources. It covers everything from Section 106 compliance to writing CRM plans. The book is written in a very informal, often breezy style—sometimes a little too breezy for my taste, but the upside is that the tone is totally unthreatening to anybody trying to learn the CRM ropes. It is full of real-life examples that put flesh on the (very) dry bones of government regulations, and lots of advice from King's long experience in the trenches. A good addition to any park library.

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Robert Stottlemyer, David Toczydlowski, and Raymond Herrmann. *Biogeo-chemistry of a Mature Boreal Ecosystem: Isle Royale National Park, Michigan.* Scientific Monograph NPS/NRUSGS/NRSM-98/01, National Park Service, 1998. 116 pp. Copies available from R. Stottlemyer, U.S. Geological Survey, 240 W. Prospect Rd., Fort Collins, CO 80525 USA.

This monograph is a testament to the value of long-term research and monitoring in protected areas. How many research projects go on for more than a few years ... yet how often do we wish we had unbroken data sets that cover long periods of time to use as a baseline? Here, the authors report on 16 years of watershed ecosystem research at Isle Royale, and go a long way toward establishing a solid baseline against which future park managers can measure change, both in the park itself and as a benchmark for the "vital signs" of the Upper Great Lakes. As Ray Herrmann says in the introduction, data such as those reported in this study "make it possible to question existing paradigms and to obtain new understandings about fundamental relationships within and between naturally functioning ecosystems" and provide an example that is "appropriate for a potential network of long-term global baseline research sites." This monograph can be recommended to any park that would like a model for how to set up (and publish the results of) long-term ecological research. Mary Meagher and Douglas B. Houston, *Yellowstone and the Biology of Time: Photographs Across a Century.* Norman: University of Oklahoma Press, 1998. 287 pp.

This is a portfolio of repeat photographs of the same view in the park, from the same location and angle, over a period of 100 years or more. Each set has a historic photo (usually dating from the end of the 19th century), a photo from the 1970s, and one from the 1990s. If done carelessly, such projects have little value, but Meagher and Houston, long-time scientists in the park, have taken great pains to take their repeat photos close to the same spot as those of the original photographer (the location is documented). Only someone with vast experience in the park could have deduced the plausible original locations—and both Meagher and Houston gualify on this count. The results are fascinating. Not only do we see the obvious effects of the fires of 1988, but even in unburned areas of the park there are subtle (and not-sosubtle) changes in the landscape. Meagher and Houston's text adds considerable value to the visual record by describing differences in the foreground, mid-ground, and background of the photos. This book is a gem—a joy to look at, to read, and just to hold. It combines scientific merit with coffeetableguality photography, and is beautifully printed and typeset. It belongs on the shelf of any Yellowstone lover, and of anyone who is interested in documenting long-term environmental changes.

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John Tuxill and Gary Paul Nabhan, *Plants and Protected Areas: A Guide to in situ Management.* People and Plants Conservation Manual #3. Cheltenham, U.K.: Stanley Thornes Publishers, 1998. 248 pp.

The "People and Plants" program is a joint venture of WWF, UNESCO, and the Royal Botanic Gardens, Kew, U.K. As the name suggests, it takes an ethnobotanical approach to conserving plant biodiversity, and this manual focuses that approach on conserving plants *in situ* within protected areas. Tuxill, a botanist based in Panama, and Nabhan, the director of science at the Arizona-Sonora Desert Museum, are well-versed in the practicalities and challenges of doing this type of work, and have delivered a text that will prove useful to managers of plant resources. The book draws on protected areas experience in the tropics, but many of the techniques described (e.g., threat characterization, I&M tools, plot methods, etc.) can be adapted to a wide range of ecosystems. Other parts of the book, such as the conservation of traditional agricultural practices and the discussion of land tenure issues, have particular application to developing-country situations. But all in all, any resource manager who has to deal with plant communities will find valuable information here. J. G. Nelson et al., eds., *Parks and Protected Areas Research in Ontario 1998.* Waterloo, Ontario: Parks Research Forum of Ontario, c/o Heritage Resources Centre, University of Waterloo, 1999; hrc@fes.uwatrerloo.ca. 410 pp.

Conference proceedings, as we all know, can be pretty checkered affairs. The quality of papers often varies considerably, and if you approach a proceedings as you do a regular book, expecting to read it straight through, you are usually disappointed. But this is the wrong way to go after proceedings. It's better to skim them, find the articles that look particularly inviting, and glean what you can out of them. This volume, summarizing the 1998 annual meeting of the Parks Research Forum of Ontario, is a cut above the usual conference book. There are some excellent invited overview papers (I single out Nik Lopoukhine's overview of Canada's protected areas), and a number of good volunteered papers on topics as diverse as protecting cultural resources through forest management practices to coastal geomorphology. The book stands on its own, but, additionally, recommends itself to readers from outside Canada who'd like a snapshot of the kind of research going on in its most populous province.

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Kenneth E. Hornback and Paul F. J. Eagles, *Guidleines for Public Use Measurement and Reporting at Parks and Protected Areas.* Gland, Switzerland, and Cambridge, U.K.: IUCN, 1999. Available through IUCN Publication Services Unit, info@books.iucn.org. 90 pp.

The summer I worked at Theodore Roosevelt National Park, one of my duties was to take the down the daily counts at the visitor center. There was an automatic counter that registered people as they came through the front doors. It made an audible click, and I well remember that it sounded like a Geiger counter going off every time somebody pushed a stroller through the entrance. It wasn't terribly accurate, but it did enhance our visitation! If you are serious about getting accurate visitor statistics for your park—and the importance of this information to maintaining political support for parks is obvious—then get this book. Hornback, who is retired from the USNPS, and Eagles, a professor at the University of Waterloo in Ontario, have thought through this specialized but important topic more thoroughly than anyone before. They cover all aspects of measuring public use: the pros and cons of various counter systems, data collection and analysis, visitor studies, and an especially useful chapter on the special problems of measuring public use in marine protected areas.

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