
THE WILD PLANET PROJECT



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Cover photo: Early morning mist over a frozen lake in Tok, Alaska, by Patricio Robles Gil. **Seal:** Highly endangered Hawaiian Monk Seal, Papa hanaumokuakea National Marine Monument, NW Hawaiian Islands, by James Watt. **Man and child:** Aboriginal with child in Karawari River, Papua New Guinea by Patricio Robles Gil. **Leopard:** Young leopard in Kruger National Park, South Africa, by Patricio Robles Gil.

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The WILD Foundation

Working for Wilderness, Wildlife, and People since 1974

BY VANCE G. MARTIN

THE WILD FOUNDATION, ESTABLISHED IN 1974 as a U.S.-based nonprofit organization, is the only international conservation organization whose core work is focused on wilderness. In this publication, I describe WILD's mission, programs, organization, and some of its accomplishments. I also briefly introduce one of WILD's newest and most important initiatives, The Wild Planet Project (WPP), which is the focus of the remainder of this special publication of *IJW*. WPP is led by Cyril Kormos, WILD's vice president for policy and the compiler of this publication. In the article that follows, Kormos outlines WPP's purpose, current activity, progress to date, and prospective next steps. This publication includes summary articles by experts who presented WPP-related material at the 8th World Wilderness Congress (WWC) in Alaska in October 2005, and other sources.

What does it mean to work internationally for wilderness? Although WILD has been involved in significant and strategic purchases of land at various times and in numerous countries, and continues to work on practical field projects that protect wilderness and wildlife, the heart of our work is with *people* ... because that is where environmental issues start and where they can be solved. We believe in the power and effectiveness of good information and training; the direct, personal experience of wild nature; and the power of inspired action. Informed and inspired people are the strongest force for wilderness—some of whom may be poor and need to receive tangible benefits from nature conservation, and others who are in a position to act with foresight in their community, organization, or nation. We target three levels: (1) *the public and private sectors*—including politicians, policy makers, and corporate executives; (2) *conservation professionals*—including managers, scientists, educators, and others; and (3) *the public*—ranging from poor villagers, to disadvantaged youth, to concerned citizens in wealthy countries. In these sectors, we work with true opinion leaders who shape policies, laws, and actions that influence or impact wilderness and wildlands, both terrestrial and marine. Opinion leaders are most often seen as political, cultural, and corporate leaders, but don't forget that opinions are shaped and actions implemented at every level of society, and it is often local people whose actions have the most direct impact—both good and bad—on wilderness.

As an illustration of local involvement, I can think of no better way to introduce the heart of WILD and WPP than to share a story from one of our recent initiatives that assists native peoples to protect and manage their own wildlands.

A Wild Journey

I first met Megaron Txukarramãe, a Brazilian Kayapo Indian, in October 2005 in Alaska (of all places). WILD had invited him and two colleagues to represent his people at the 8th WWC for the initial, pioneering meeting of the Native Lands and Wilderness



Vance G. Martin, president, The WILD Foundation, and executive director, World Wilderness Congress. Photo by Susan Canney.

Council. He was brought to Alaska by the remarkable Canadian Barbara Zimmerman, who has worked with the Kayapo for 25 years. Megaron impressed me as a charismatic, but quiet and thoughtful man, who speaks some Portuguese but no English. Clearly out of his environment, he was well bundled up against the somewhat mild Alaskan October weather.

Megaron and his colleagues presented their story to other tribal, non-governmental (NGO), and governmental leaders on how they manage and protect the 30 million acres (12,140,569 ha) of rain-forest wilderness that is their home and that supports them. Their land is a nationally declared Indigenous Reserve,

but its protection and management are entirely the responsibility of the Kayapo people, and the reserve is under constant threat. In a daily struggle for their own survival, the Kayapo know that if the forest is destroyed, so are they.

Six months later I saw Megaron again when I visited the village of Piaracu, in the Kayapo Reserve in the southern Amazon. I was with Barbara and several leaders of Conservation International (CI) working with the Kayapo to help them protect their lands. We participated in a meeting of the chiefs and subchiefs from 19 (of 21) villages, the largest Kayapo gathering of its kind. They met to assess the numerous escalating threats, such as state-proposed dams on the main Xingu River and one of its largest tributaries, the Iri; incursions by subsistence farmers and ranchers; and increasing erosion and pollution in the rivers caused by the spread of large commercial soybean farms. They met to fight for their survival.

By the consensus of 6,000 Kayapo, Megaron, after returning from the United States, was chosen as head chief. His experience at the 8th WWC and later in Washington, D.C., had changed him. In meetings and talks with other tribal and NGO leaders, Megaron realized that the Kayapo's struggle to retain their home was not only important to them, but also to the future of other tribes. He saw how collaboration with others could be powerful and effective. He was re-inspired and knew that he had to commit himself to reunifying the Kayapo people and expanding their struggle, or they would not survive. He returned to Brazil, visited all the Kayapo villages, and spent months talking and planning with his people, convincing them that only in complete unity could they meet the challenges ahead.

Barbara commented, "I admit that I was skeptical about the trip at first, and our travel expenses to Alaska were a lot to ask CI to provide, but they readily agreed. His transformation is amazing and unmistakable. Megaron is a warrior now. He is recognized as the first leader of a unified Kayapo nation in many generations."



Figure 1—Megaron addresses the assembled chiefs of the Kayapo Nation in Piaracu village, March 2006, southern Amazon, Brazil. Photo by Vance G. Martin.

Wilderness is not just a physical resource. Much of human culture, creativity, spiritual inspiration, and tradition emerge from our deep connection to wild places. With traditional communities such as the Kayapo, the resource link between wildlands and their survival is undeniable. Less recognized are the psychological foundations providing cultural stability for human communities who trace their roots back to the organic interdependency modeled in wild places. Many tribes and communities have disappeared or imploded culturally after having lost their wildlands. For most of us in the developed world who are removed from regular contact with wild nature, its essential services and cultural importance are more abstract and not easy to define. As a result, we may be even more imperiled than the Kayapo, as we are less aware of the critical dangers posed by a diminishing resource of wilderness.

The WILD Mission

As human population inexorably increases, consumption of natural resources skyrockets, and wild nature disappears, all people on this planet share a common reality, no matter their culture, country, or class. *Wilderness has never been as important as it is today. But it is not as important today as it will be tomorrow.*

This reality is the core of WILD's mission, to

- protect and sustain wilderness worldwide;
- promote the values and ecological services provided by wild lands and waters; and
- provide wilderness-related environmental experiences, education, information and training.

WILD works with governments, businesses, and academic and other organizations to accomplish its mission throughout the world. Recognizing that the well-being of wild nature and human communities are increasingly interdependent, a specific focus of WILD's projects is *integrating the protection of wilderness with the needs of people* through three primary program areas.

Major Program Areas

The WILD mission works through three major program areas, each containing numerous projects.

1. WILD International—Wilderness Policy and Protected Areas:

WILD is perhaps best known for our flagship project, the World Wilderness Congress (established by WILD and its founder, Dr. Ian Player, in 1977), and I present the WWC in detail below. In addition, WILD has initiated or cofounded many projects that convened a wide range of international partners and coordinated new wilderness policy



Figure 2—The Kayapo Reserve, one of the last bulwarks of tropical forest in the southern Amazon. Photo by Vance G. Martin.

initiatives. These partners include Conservation International, the Sierra Club, The Wilderness Society, the Canadian Parks and Wilderness Society, the Global Environmental Facility, the Confederated Salish and Kootenai Tribes, and a long list of other established institutions, grassroots organizations, and native communities. A specific and important part of this program area is the Wilderness Task Force (WTF), an official arm of the World Commission on Protected Areas (IUCN-WCPA). The WTF was founded under WILD stimulus, and is cochaired by me, as WILD president, and Khulani Mkhize, CEO of Ezemvelo KZN Wildlife, South Africa. It includes dozens of wilderness experts and organizations from many countries, including Harvey Locke (Canada), Alec Marr (Australia), Bittu Sahgal and Partha Sarathy (India), and Bill Bainbridge (South Africa). The Wild Planet Project (discussed in detail in this publication) is our newest and most proactive effort in this program area. Before discussing the WWC's strategy and results, it's important to note WILD's operating and organizational philosophy.

2. WILD Action—Practical field projects: WILD facilitates, manages, or sponsors field projects that work at different scales,

depending on the issues and the available resources. Although WILD conducts targeted projects in Europe, Asia, and Latin America, most of our on-the-ground projects have been implemented in Africa. Examples of work over the previous 10 years include cofounding the highly effective Cheetah Conservation Fund in Namibia; implementing conservation, microlending and economic empowerment, as well as organic food production in rural villages; wild dog conservation; protecting the desert elephants in Mali with Save the Elephants (Kenya) and the Environment and Development Group (UK); helping to renovate and restore the Kissama National

Park in Angola with our colleagues in the Kissama Foundation; wildlands restoration in Mozambique with local partner Forum Natureza em Perigo; providing equipment, antipoaching aircraft, and other equipment for game rangers; and much more.

3. WILD Information—Publishing, education, and outreach: In this "Institute without Walls," WILD works in partnership with Fulcrum Publishing (founded by Bob and Charlotte Baron, who also serve on WILD's board), and many government agencies and nonprofit partners, to publish professional and public books and materials, as well as implement many public awareness and professional training projects. One example is the third edition of *Wilderness Management* (Hendee and Dawson, 2002), the standard reference for wilderness managers around the world. WILD cofounded *The International Journal of Wilderness* in 1995, and continues as its publisher (with Dr. Chad Dawson, State University of New York, as managing editor) on behalf of a large group of active partners, including all the U.S. federal land management agencies, and several universities and conservation organizations. WILD has published the proceedings from each of the eight World Wilderness Congresses,



Figure 3—The Kayapo are struggling to protect their wilderness homeland in order that their children, like these in Kendjan village, have a future. Photo by Vance G. Martin.



Figure 4—The heat in Mali reaches 45° C (113° F) in April, and the desert elephants seek the dense cover of occasional copses. Photo by Vance G. Martin.

and many other titles that address the conservation of wild nature, including two moving and informative memoirs: *Zulu Wilderness, Shadow and Soul* (Player 1998) and *When Elephants Fly* (Batus 2005). WILD also initiates media programs to inform and educate the public, such as The WILD Awards, the only project that has addressed the use of nature images in for-profit advertising. Finally, a significant emphasis is the training of conservation professionals either on-site (most recently providing wilderness management training for conservation professionals in South Africa, Namibia, Zambia, and Zimbabwe in conjunction with the Wilderness Action Group, the Sierra Club, and the Zambezi Society) or in special international training sessions (see World Wilderness Congress, below)

WILD Focuses on Innovation and Collaboration

In the many decades of work by WILD and the Wilderness Network (see below), one of the most consistently recognizable patterns is our ability to pioneer in forgotten or disregarded locations and identify the ever-increasing threats to wildlands and wilderness. For example, our founder, Ian Player, pioneered multi-racial environmental education in South Africa during the apartheid era, when it

was illegal to do so. We were one of the only international conservation NGOs to work in Mozambique and Angola while their civil wars were still raging. Seeing the truly unique stature of the desert elephants of Mali, and the complete lack of involvement on their behalf by large international conservation organizations, we immediately went to work to help this highly endangered and phenomenal herd. This “first in” characteristic within the environmental sector holds true for other issues, such as including native people in international conservation, involving local communities in conservation programs and benefits, working with AIDS orphans, and more.

Our international work in this manner has two signature elements—*innovation* in developing conservation solutions that also address human cultural and social needs, and *collaboration*, facilitating many different partners to achieve more effective and targeted conservation results.

For example, some of the innovative social and cultural programs initiated by WILD and its partners in The Wilderness Network are the International League of Conservation of Photographers (See *IJW*, April and December 2005), and numerous programs in South Africa and elsewhere that address solutions to social issues such as youth at risk, educating political and social opinion leaders, and others. In one program, WILD is a partner

in uMzi Wethu (“Our Homestead”), a conservation training and employment program specifically targeted to help orphans and vulnerable children who are victims of the escalating AIDS crisis in Africa (see the summary article by Andrew Muir later in this publication). Previously, WILD partnered in a program to take South African Members of Parliament on wilderness experience, an effort that dramatically helped build environmental awareness in South Africa’s postapartheid government.

The Wilderness Network

All WILD projects are executed in collaboration with partners. Sharing resources eliminates duplication and decreases cost, and the wisdom from shared “best practice” allows for more effective work on the ground. At the core of the partners and collaborators is The Wilderness Network, which was born in wild country, informed and inspired by the many decades of work in African wilderness by Dr. Ian Player and his Zulu mentor, Magqubu Ntombela. As the “WILD idea” has grown, a Wilderness family, or network, has evolved that links several like-minded organizations in the United States, Africa, and Europe, all sharing a similar philosophy while following individual strategies to protect and sustain wilderness. The Wilderness



Figure 5—Microlending programs in the Isandlwana village, KwaZulu Natal, helped to start numerous new local businesses such as a beader’s cooperative. Photo by Vance G. Martin.



Figure 6—Accredited training of wilderness management professionals from 20 nations, as part of the 8th WWC, was part of WILD's ongoing international commitment to assist, inform, and train managers responsible for wilderness and wildland areas. Photo by Vance G. Martin.

Network includes The WILD Foundation, the Wilderness Leadership School, the Wilderness Foundation South Africa, the Wilderness Foundation UK, and the newly forming Wilderness Foundation in Germany.

The Wilderness Leadership School in South Africa was the first organization founded by Dr. Player, and remains the spiritual heart of The Wilderness Network. Established in 1963, it dared to pioneer multiracial environmental programs in South Africa during apartheid, and set a new international standard for wilderness experience programs. More than 35,000 people have participated in these programs in small groups of no more than eight people, on foot, in the wilderness.

The Wilderness Foundation South Africa, directed by Andrew Muir, was established in 1972 and is the leader in South Africa in wilderness advocacy, wildland management projects, and experiential wilderness projects. It has pioneered numerous innovative programs that apply conservation solutions to significant social issues (such as AIDS, poverty, disadvantaged communities, etc.), while fostering leadership development, enhanced self-esteem, and cultural identity. Working with the Global Environmental Facility of the World Bank and other international development organizations, it also has created new models of cooperative, nongovernmental, large-scale land conservation in the Baviaanskloof Wilderness Area, the Wild Coast, and elsewhere in South Africa.

The Wilderness Foundation UK was founded in 1976. Currently directed by Jo Roberts, it offers a rich program of

wilderness trail experiences in Scotland, Wales, Britain, northern Europe, and Kenya, while working and collaborating on numerous practical conservation projects. One of these is Wild Britain, developed by trustee Toby Aykroyd, demonstrating that wild areas in Britain can bring economic and social benefits to farmers and landowners, people in local communities, as well as to the inhabitants of London.

After 33 years of working internationally, WILD is more convinced than ever of the importance of collaborative networks—of informed, inspired, and effective people and organizations—that can maximize donor funding, reduce expenses through shared travel and work, and use local expertise whenever possible.

The World Wilderness Congress

This report closes with an overview of WILD's flagship project, the World Wilderness Congress (WWC), the conservation initiative that unites The Wilderness Network with many other cooperating organizations, institutions, and individuals. *The Congress is also where innovation and collaboration converge to generate significant, practical conservation results.* The WWC is the world's longest-running international and public environmental forum (see *IJW*, December 1998, April 2001, December 2005). Since 1977 it has convened eight times: in South Africa (1977), Australia (1980), Scotland (1983), United States (1987, Colorado), Norway (1993), India (1998), South Africa (2001), and United States (2005, Alaska). At every Congress, results include new

funding, new protected areas, new laws and policies, and more. A very few of these practical results are:

- *Native involvement in conservation*—Indigenous groups have responsibility for millions of square kilometers of wildlands and seas around the world, and contain traditional knowledge of inherent value to the conservation of these lands and the services they provide. In 1977, during the apartheid era in South Africa, the 1st WWC convened native people with conservationists, businesspeople, and government representatives for the first time. This integration of native cultures in WILD and WWC work has grown constantly through the years, while at the same time other conservation organizations have come under heavy criticism for ignoring native needs and issues. Most recently, at the 8th WWC, the first Native Lands and Wilderness Council was convened, organized and implemented by native leaders, and funded through WILD by the Christensen Fund, the Thoresen Foundation, the Ford Foundation, and others.
- *New protected areas*—In 1980, at the 2nd WWC in Cairns, Australia, new protected areas were declared in Queensland and the Great Barrier Reef, and the Tasmanian wilderness struggle was launched on to the international scene by Bob Brown and his colleagues. Almost every WWC

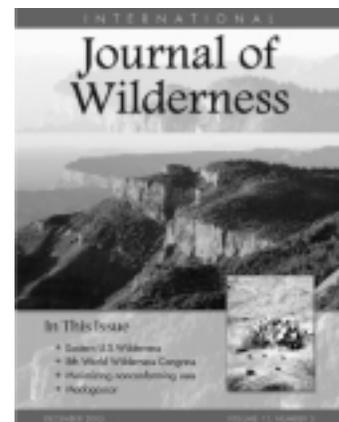


Figure 7—The *International Journal of Wilderness* is an ongoing cornerstone of WILD's publishing program, complementing the other books and materials produced annually.



Figure 8—As part of our emphasis on culture as an effective tool for conservation, a public sculpture was commissioned and installed in downtown Anchorage, Alaska, and has become a local icon for tourist photographs. Here, the mayor of Anchorage (left), Mark Begitch, accepts the sculpture on behalf of Alaska. Photo by Cathy Hart.

has led to the creation of new wilderness and other types of protected areas. Globally, native lands represent hundreds of millions of acres of wildlands, much of which could be or is protected as wilderness. Currently, the Confederated Salish and Kootenai Tribes have demonstrated leadership in proclaiming the Mission Mountains Tribal Wilderness.

- *New organizations and wilderness*—In 1983, at the 3rd WWC, the plenary schedule was changed abruptly to accommodate a conservationist from Italy who was alone in working on wilderness issues in his country. Reinspired and motivated as a result of the WWC, Franco Zunino returned to Italy, formed a new NGO, and subsequently pioneered a new type of wilderness designation (on municipal lands and watersheds), and now has facilitated designation of 17 wilderness areas.
- *Conservation finance*—In 1987 at the 4th WWC, a major group of bankers, economists, and conservationists concentrated on a concept devised by Michael Sweatman, WILD's chair-

man at the time, of a World Conservation Bank. From that came a grant and a working group that eventually designed the structure of the Global Environment Facility of the World Bank, now the largest funder of environmental conservation in the world. The 4th WWC also included the first organized investigation of marine wilderness, in a working session organized by (the late) Dr. Nancy Foster of the National Oceanic and Atmospheric Administration (NOAA).

- *Wilderness inventories, marine, terrestrial, and riverine*—For the 4th, 5th, and 6th WWCs, Michael McCloskey, then chairman of the Sierra Club, created and presented the world's first inventories of remaining terrestrial, marine, and riverine wilderness and potential wilderness. This was followed by increasingly comprehensive wilderness inventories and analyses of eco-services from these lands, at the 7th and 8th Congresses, including expanded research into and policy for oceanic and marine wilderness areas.

- *Private sector wilderness, and new legislation*—The 7th and 8th WWCs broke new ground in wilderness designation by reaching out beyond public lands, facilitating designations of new wilderness areas from the private sector. In South Africa this was on land owned by the Mantis Collection at Shamwari Game Reserve, and in Mexico at El Carmen, with our partners Agrupacion Sierra Madre, on extensive wildlands owned by CEMEX. In addition, at the 8th WWC the first wilderness law in Latin America was announced and detailed, promulgated by the government of Mexico.
- *Training*—Keeping wilderness wild requires special awareness and training, distinct from that of managing national parks or game reserves. The WWC has always produced workshops for professionals and citizens, but in the past 10 years we have increased our commitment to this important area. Taking training originally developed by the U.S. federal agencies, we worked with our colleagues in the Wilderness Action Group (WAG) South Africa—formed during the 3rd WWC—and began to internationalize its principles and techniques, and apply them in trainings in southern

Informed and inspired people are the strongest force for wilderness.

Africa. Taking it further, at the 7th and 8th WWCs, WILD and WAG provided accredited training courses for public and private sector conservationists and native leaders from more than 30 countries, including such diverse nations as Mozambique, China, India, Bangladesh, Ghana, Mexico, and many more. This expanding initiative was funded through WILD by the



Figure 9—More than 45,000 people, mostly disadvantaged youth from communities throughout South Africa, have experienced the programs of the Wilderness Leadership School and the Wilderness Foundation South Africa. Photo by Margot Muir.

Sierra Club, the New York Community Trust, CIDA (Canada), and others.

- *The use of wilderness for personal growth, therapy, and leadership development*—In keeping with WILD's emphasis on the link between wilderness and people, each Congress has tried to expand the scholarship and practice of projects that use wilderness to expand human potential through experiential programs. Originally instigated by Dr. John Hendee (former U.S. Forest Service administrator; dean of forestry at University of Idaho; and on WILD's board of directors since 1988), this major project area has come together



Figure 10—Carlos Manuel Rodriguez, minister of environment in Costa Rica, addresses the 1,200 delegates at the 8th WWC. Photo by Carl Johnson.

at five of the Congresses through significant symposia of academics and practitioners.

- *Wilderness Science and Management*—Every WWC features plenary sessions and symposia providing forums where university and government wilderness scientists and managers present a variety of ideas, technical analyses, progress reports, and panel discussions. The WWC Science and Management program, launched at the 4th, 5th, and 6th WWCs by WILD science director Dr. John Hendee, was further expanded at the 7th and 8th WWCs by Dr. Alan Watson of the Aldo Leopold Wilderness Research Institute (funded by all the U.S. federal land management agencies). For example, at the 8th WWC in Alaska, the U.S. federal agencies collaborated and convened the first Global Wilderness Management Seminar for Government Agencies. Further, during three days of wilderness working sessions, the WWC Science and Management program sponsored 36 technical sessions, featuring 450 presentations or posters. Following each WWC the proceedings of the Science and Management program provide important repositories of selected wilderness science and management knowledge and progress.
- *Culture and conservation*—At every Congress there is action on one of

WILD's maxims: *Culture is not just entertainment; it is part of the conservation solution.* As a result, the WWC incorporates artists, poets, writers, photographers, and others—from all communities, including native—to infuse the proceedings with the inspiration and practical aspects of their work for conservation. The most recent results include numerous popular publications; donation of a major public sculpture to downtown Anchorage to inform and inspire the people of Alaska; and the significant founding of the International League of Conservation Photographers by Cristina Mittermeier and dozens of the world's top photographers.



Figure 11—Megaron addresses the first Native Lands and Wilderness Council at the 8th WWC, Alaska, 2005. Photo by Vance G. Martin.

The WWC Strategy

This record of the WWC's practical success over almost 30 years and eight Congresses has been achieved through a deliberate and evolving strategy. **The WWC is a conservation project, not a conference.** Each Congress takes three years or more to conceive, fund, and implement. Conservation objectives are identified, collaborating partners and coalitions are formed, finances are raised, and work proceeds to achieve these objectives. The convened Congress with 1,000 to 2,000 delegates from 45 to 75 countries is simply the culmination of this process, where results can be seen, evaluations conducted, announcements made, and future plans conceived.

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The Wild Planet Project

BY CYRIL F. KORMOS

Introduction

The World Wilderness Congresses (WWCs) have long served to unify the global wilderness community, helping to develop, refine, and better communicate the case for wilderness protection, and launching new research and wilderness conservation approaches. But WWCs only convene every three to five years, making it sometimes difficult to establish continuity between these seminal events, and to capitalize fully on the important momentum they generate. The Wild Planet Project (WPP) is an initiative by The WILD Foundation to provide an organizing framework to sustain, extend, and communicate the important work shared by the wilderness community at the World Wilderness Congresses.

Initially, WPP will facilitate, further develop, or publicize work in three principal areas, which have been important focal topics for the Congresses over the years: (1) the social, biological, and economic benefits of wilderness areas; (2) policy tools for wilderness designations on public, private, and indigenous people's lands; and (3) enhancing management of wilderness protected areas. We hope that by providing this platform for the global wilderness community, WPP will help sustain the energy and passion of the Congresses. We also hope that by gathering and disseminating the state-of-the-art information, and by helping to develop new tools, WPP will help generate more and better protection of wild areas and wilderness around the world.

Warning Signs

As we enter the 21st century, we find ourselves at an interesting crossroads. The warning signs that our planet is facing an environmental crisis are everywhere. The United Nations Millennium Ecosystem Assessment (MEA) reports that six of the planet's 14 major biomes are now at least 50% converted to other uses, primarily agriculture, and that we can expect that another 10 to 20% of all grasslands and forestlands will be converted by 2050. The United Nations Environment Program's Global Environment Outlook 2006 (UNEP 2006) states that annual deforestation is at approximately 13 million hectares (32 million acres) per year, of which approximately 6 million hectares (15 million acres) is primary forest.

This destruction of our natural environment is reducing the planet's ability to provide essential ecosystem services. Of the 24 ecosystem services assessed by the MEA, 15 were in decline, including vital functions such as freshwater generation, pollination, and marine fisheries production. Land conversion is also exposing human populations to increasing numbers of pathogens—from SARS to Ebola to AIDS to avian flu. And as we push farther into remote areas we are also introducing invasive species in growing numbers, leading to a gradual homogenization of biodiversity around the planet, and losses of more than \$100 billion annually that can be attributed to biodiversity reduction.



Cyril Kormos speaking at the 8th World Wilderness Congress during the launch of the WPP. Photo by Carl Johnson.

Compounding these problems, atmospheric carbon levels are the highest they have been in 650,000 years; the Earth is the warmest it has been in at least 400 years, and the impacts of climate change are accelerating more quickly, and are being felt more deeply, than predicted. The consequences, from devastating storms to the spread of pests and disease, and to drought and crop losses, are widespread and will likely increase.

As a result of climate change and land conversion, extinction rates are now 100 to 1,000 times higher than background extinction rates in the geological record, and we are facing an extinction spasm on a scale unseen in the last 65 million years. Indeed, the Convention on Biological Diversity's

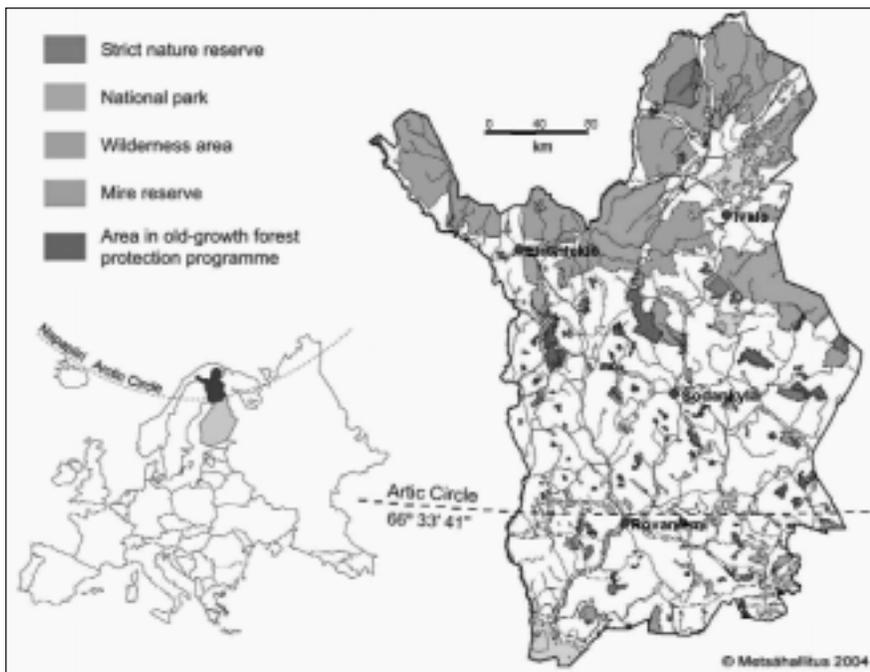


Figure 3—Protected areas in northern Finland, including wilderness.
Photo courtesy of Metsähallitus.

Wild Planet Project intends to provide an organizing framework for this process: creating more continuity between the Congresses, and sustaining and extending the important work conducted by the wilderness community at these events. We hope that by continuing to gather the state-of-the-art wilderness information, and by developing new tools, WPP can facilitate new and more effective wilderness protection worldwide.

What Is The Wild Planet Project? Mission and Objectives

The Wild Planet Project began in 2004 as an applied research and management initiative sponsored and coordinated by The WILD Foundation, and was formally launched at the 8th World Wilderness Congress in Anchorage, Alaska, in 2005. WPP's mission is to generate new wilderness and related designations around the world. To achieve this mission, WPP focuses on three objectives:

1. to compile existing research, and to facilitate additional research as necessary to strengthen the state-of-the-art information relevant to wilderness protection;
2. to disseminate this information in a summary format accessible to the public and decision makers; and

3. to facilitate the application of this information through new wilderness conservation tools for decision makers and wilderness managers.

WPP works toward these objectives in three topical areas:

1. summarizing and raising awareness of the social, biological, and economic benefits of wilderness areas;
2. developing policy tools for wilderness designations on public, private, and indigenous people's lands; and
3. enhancing management of wilderness and protected wild areas.

How It Works

The WPP is an initiative sponsored and coordinated by WILD, who will facilitate research and implement projects to contribute to WPP's progress. Further, WPP is a collaborative effort involving the full range of partners who attend World Wilderness Congresses: government agencies; multilateral institutions; indigenous groups; NGOs; the private sector; artists, writers, and filmmakers; academia; and the public. WILD is committed to using the WPP as an organizing and coordinating framework to leverage, amplify, or otherwise facilitate

and support the work of the wilderness community.

A first step for WPP is to generate a concise and up-to-date summary of the best information on wilderness and wilderness conservation in each of the three topical areas (i.e., wilderness benefits, policy tools, and management). WPP will also identify gaps in knowledge, and where possible, facilitate work to help fill those gaps. A next step is to disseminate the summary information to help raise awareness among the public and decision makers, and to provide new ideas and new models for conservation professionals. A final step is to facilitate the application of the state-of-the-art information in new field projects. Of course, for some topical areas, it will not be necessary to go through all of the steps described above. For instance, in the case of wilderness management, where the state of knowledge has been thoroughly summarized (Hendee and Dawson 2002), the focus is shifted toward the third objective of facilitating management applications and training.

How will this function in practice? WPP's second topical area, policy tools, provides a good example. WILD has played an important role in summarizing international wilderness law and policy via the Congresses, and the *Wilderness Management* textbook (Hendee and Dawson 2002). However, there is currently no in-depth legislative analysis available that can provide detailed guidance for conservation professionals seeking to develop wilderness laws and policies for countries that do not have



Figure 4—Larry Mercurieff, one of the co-Chairs of the Native Lands and Wilderness Council, with participants from Mozambique. The Council focused on wilderness conservation efforts by indigenous groups on their native lands. Photo by Vance G. Martin.

them. This kind of tool, a wilderness legislation “how to” manual, has been repeatedly requested at the Congresses.

As a result, WILD held a Roundtable on International Wilderness Law and Policy in 2004, on the occasion of the 40th anniversary of the 1964 Wilderness Act in the United States. The roundtable, chaired by the author, brought together wilderness legislation experts from seven different countries. WILD and roundtable participants resolved to develop the first “Handbook on International Wilderness Law and Policy,” an effort that will address all of WPP’s objectives: summarize the state of knowledge in a key topical area, fill gaps in knowledge, and provide a valuable tool to help develop new wilderness laws to help create new wilderness protected areas.

Wilderness is essential to everyone, including those who live very far from wilderness, never give wilderness areas a second thought, and never set foot in one.

WPP is a work in progress. WPP’s operations are still evolving and will be an ongoing, dynamic process. Some of the work described below is more advanced, and some less advanced. In addition, new topics may emerge and be added to WPP operations. The overriding WPP goal is to advance information and tools that will contribute to wilderness and wild area conservation worldwide.

The Wild Planet Project: Results to Date and Next Steps Wilderness Benefits

An essential goal of WPP is to provide a summary overview of the benefits provided by wilderness areas. Although the benefits of protecting wild places are often mentioned in media reports or



Figure 5—Participants in the Native Lands and Wilderness Council from the Seri tribe in northern Mexico. Photo by Vance G. Martin.

technical papers and have been the subject of many presentations at the WWCs, the full range of benefits are not often presented side by side and comprehensively. WPP is therefore focused on presenting the newest and best information on the many different benefits—biological, economic, and social—provided by wilderness and other wild places (see the summary articles in the April 2007 issue of *IJW*). Two key points emerge about the benefits of wilderness.

First, the benefits wilderness areas provide are essential to everyone, including those who live very far from wilderness, never give wilderness areas a second thought, or never set foot in one. This point is being brought home by biologists and economists who have become much better at quantifying the benefits of wilderness protection, and also by the public, who is now able to witness global environmental change firsthand. It is impossible to ignore the terrible floods caused by hurricanes in the United States, the devastation caused by the Asian tsunami as it swept over coasts denuded of mangroves and natural vegetation, and worsening environmental problems all over the world—from drought to disease, from pest infestations to some pests and diseases migrating to new locations as a result of climate change.

Second, wilderness conservation is justified for several reasons. For example, wilderness conservation can be essential to protect indigenous cultures, to provide ecosystem services such as clean air and clean water, for intrinsic value, or for the economic value of wilderness uses. Articulating the full spectrum of arguments for wilderness

conservation is important because different arguments will apply in different places, depending on the local context and the decision makers concerned. Following is a description of these categories of wilderness benefits:

1. *Biological Benefits: Biodiversity and Ecosystem Services.* There is a flood of new data highlighting our planet’s environmental crisis, and a growing consensus on its severity, with thousands of scientists contributing to the United Nations studies mentioned above. These studies provide the clearest illustration to date of the cascading effects of losing biodiversity and degrading wild natural areas. Biodiversity loss, species by species or via the wholesale destruction of wild places, leads to the erosion of ecosystem services and, thus, affects human well-being everywhere and directly threatens the health and livelihoods of billions of people. Biodiversity loss is not simply an esoteric scientific concern. The steady unraveling of the web of life on our planet is having far-reaching social and economic, as well as biological implications.

Several presentations at the 8th WWC sought to clarify the critical role of wilderness in stemming the loss of biodiversity and the erosion



Figure 6—Ian C. Player, founder of the World Wilderness Congresses, The WILD Foundation, and several other organizations, gave the keynote address to both the Global Wilderness Seminar for Government Agencies as well as the 8th WWC itself. Photo by Vance G. Martin.



Figure 7—A five-day, accredited wilderness management training session, for NGO and government professionals from 17 countries, was held just prior to the 8th WWC. Photo by Vance G. Martin.

of ecosystem functions. Dr. Terry Chapin, University of Alaska, Fairbanks, and a participant in the Millennium Ecosystem Assessment, presented the latest data on global ecosystem services, and Dr. Rosimeiry Portela presented a review of the ecosystem services provided by the Amazon Basin. Dr. Jeff McNeely, chief scientist for the World Conservation Union (IUCN) summarized the biodiversity benefits of large intact areas. Dr. Chapin and Dr. McNeely have summary articles of their presentations in this special publication of *IJW*.

2. *Economic Benefits.* Economic valuations of wilderness have been criticized on the grounds that assigning a dollar value to something of intrinsic value is inappropriate. Critics have also taken issue with the methodologies used to conduct economic assessments. But, economic valuations of wilderness benefits are extremely important because conversion of wilderness is so often justified on economic development grounds. In addition, arguing for wilderness conservation on the basis of intrinsic value may be viable for wilderness-related audiences, but quantifying benefits in economic terms is usually necessary for most people.

At the 8th WWC, Dr. Trista Patterson, USDA Forest Service's Juneau Forestry Sciences

Laboratory, reviewed the various approaches to valuing the economic benefits provided by wilderness. Dr. Ray Rasker of the Sonoran Institute presented his research on the economic benefit to communities derived from their proximity to wilderness areas. The first-ever global assessment of wilderness ecotourism was presented by Dr. H. Ken Cordell and J. M. Bowker, both of the USDA Forest Service Forestry Sciences Laboratory in Athens, Georgia. Although the importance of the ecotourism industry and its potential role in conservation is well documented, little research has been conducted at the global scale to quantify their economic relationship more precisely. Dr. Patterson and Dr. Cordell's presentations are summarized in this issue.

3. *Social Benefits.* The social benefits of wilderness range from amenities for local communities, to subsistence economies that depend on wilderness as a resource base, to indigenous communities whose physical and cultural survival depends on remote areas, to

people around the world who rely on wilderness for spiritual renewal or recreation. The social benefits of wilderness for local and indigenous communities are highlighted via the Native Lands and Wilderness Council, discussed in the following section. For the purposes of illustrating social benefits, WPP highlighted the innovative work of the Wilderness Foundation South Africa and the Wilderness Leadership School (also in South Africa) in developing wilderness experiential programs. The social benefits derived from various kinds of wilderness experience programs are summarized in this publication in a short article by Chad Dawson and John Hendee.

The Wilderness Foundation South Africa and the Wilderness Leadership School are not the oldest or the largest wilderness experience programs—Outward Bound and the National Outdoor Leadership School, for example, are larger and better known. But the South African Wilderness Foundation and Wilderness Leadership School programs are



Figure 8—The 8th WWC facilitated professional and technical exchange between Alaskan and Kamchatkan wilderness managers, including a workshop held at the U.S. Bureau of Land Management's Campbell Creek Facility, near Anchorage; meeting organizer Cyril Kormos is briefly upstaged by a local moose outside of the window. Photo by Leah Zimmerman.



Figure 9—The Kamchatka peninsula in the Russian Far East shares many characteristics with Alaska and retains very intact wilderness areas and wildlife resources. Photo by Vance G. Martin.

unusual in their long-standing focus on personal growth combined with social and racial integration and political healing. Their use of a wilderness experience to promote social progress in a country that has suffered years of intense social and political strife, violent racial conflict, and a catastrophic AIDS crisis is a remarkable story.

The South African Wilderness Foundation's "Umzi wethu" program is designed to educate and support AIDS orphans and vulnerable children in South Africa through mentoring and wilderness experience in game reserves and parks. This program and the Wilderness Foundation South Africa and Wilderness Leadership School programs, are further described in a summary article by Andrew Muir in this publication.

Developing Wilderness Policy Tools

WILD has received numerous requests in recent years for updates and expansions of some of the policy analyses and tools that have been presented at past World Wilderness Congresses. One such request has been for updating information on inventories of remaining potential wilderness lands around the world. Another request, from government and NGO representatives interested in developing a new wilderness protected area classification, has been for a detailed, comparative legislative analysis reviewing how wilderness is defined

legally around the world, and summarizing administrative processes for establishing wilderness protected areas. Another recurring request has been for more information on how wilderness can be protected outside of strictly governmental protected areas systems. The following section reviews how the WPP is building on past Congresses to help address these issues.

1. Wilderness Inventories—Where Can Wilderness Still Be Found?

Clarifying where the remaining large-scale wild natural areas can be found globally is an important starting point for wilderness conservation efforts. WILD sponsored the first global terrestrial and freshwater wilderness assessments, conducted by the Sierra Club for the 4th WWC in Colorado in 1987, and there have been a series of assessments presented at subsequent World Wilderness Congresses since. At the 8th WWC, several different approaches to global wilderness assessments were reviewed, including the following:

in subsequent WWCs.

- *Marine Wilderness*—Dr. Brad Barr, University of Alaska, Fairbanks/NOAA, presented work toward a definition of marine wilderness. The Nature Conservancy, Wildlife Conservation Society, Marine Conservation Biology Institute, and others presented work toward a global assessment of the most intact marine areas.

The last several WWCs have featured successively more complete wilderness terrestrial and aquatic inventories, but the 8th WWC—with some facilitation and encouragement from WPP—featured great progress in detail and scope of the inventories. For example, an excellent comparison of the difference between a global wilderness conservation strategy and a global biodiversity conservation strategy is summarized in the Hoffman et al. article in this issue. An expanded review of freshwater wilderness findings by a number of NGOs working on mapping

The Wild Planet Project is an initiative by The WILD Foundation ... to provide an organizing framework for sustaining and extending the important work conducted by the wilderness community at the World Wilderness Congresses.

- *Review of Terrestrial Wilderness Inventories*—Dr. Michael Hoffman of Conservation International (CI) presented a review of terrestrial global wilderness inventories, including CI's 2002 analysis, *Wilderness: Earth's Last Wild Places*.
- *Wild Waters*—Dr. Michael Smith (CI) presented the first draft of a global "Wild Waters" analysis, updating and adding to the *Wild Rivers* inventory presented at the 4th WWC in 1987 and updated

intact aquatic areas is described in a brief summary by Dr. Michael Smith in this publication. An important next step for mapping this data, and which WPP will encourage and facilitate, is to produce overlay maps showing a consensus of potential wilderness around the world, including terrestrial, freshwater, and ultimately marine areas.

2. *Designating Wilderness*—Protected Areas Legislation, Indigenous

Groups, and the Private Sector. The 8th WWC featured wilderness designation on three categories of land ownership: (a) official government designations on public lands by law or policy, (b) wilderness designations by indigenous groups on native lands, and (c) wilderness designations on private lands.

(a) *Wilderness Legislation: The International Roundtable on Wilderness Law and Policy.* The first wilderness protected area classification system, the U.S. National Wilderness Preservation System, was established by the Wilderness Act of 1964 in the United States. Following a decade of work by wilderness advocates, which began at the 3rd World Wilderness Congress in 1983, the World Conservation Union included wilderness in its 1994 protected areas categories system (as IUCN Category 1b). Yet today, wilderness remains a greatly underused protected area classification. Of course, many countries have very large protected areas with de facto wilderness, some of which are zoned to remain free of infrastructure and managed as wild areas. However, only a handful of countries have actually passed laws creating an explicit wilderness protected area classification, and of those, only a few require a legislature's approval for designating a wilderness protected area (Martin and Watson 2002).

Creating an explicit wilderness classification, and requiring wilderness areas to be established by law rather than by administrative decree, policy, or zoning regulations, has several important advantages. The first is that a legal

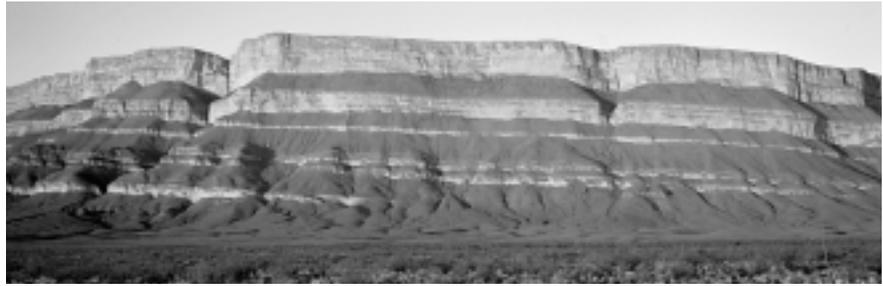


Figure 10—The El Carmen complex, site of the first wilderness designation in Latin America, on private lands held by the CEMEX corporation. Photo by Patricio Robles Gil.

wilderness designation leaves no room for confusion as to why a protected area was established. It prevents development advocates from arguing retroactively that wilderness conservation was never the intent.

Second, designating a wilderness area by law provides essential protection. Although obtaining legislative approval is often a complex and lengthy process, legislative action is much less likely to be reversed than are administrative decrees or zoning regulations. Given the constant pressure to build roads or otherwise develop protected areas around the world, sometimes even including parks with World Heritage status, conferring wilderness status with legislative action can mean the difference between an intact and wild protected area, and one that is badly fragmented.

Finally, a third advantage is that the term wilderness has strong iconic value and triggers a visceral feeling of recognition in many people. Using this term, even where there is no domestic linguistic equivalent, has great value, which is why countries as diverse as Mexico, Japan, and Iceland have opted to use it.

WPP held a roundtable in 2004 involving participants

from seven countries, reviewing U.S. and international approaches to wilderness law and policy. The roundtable, chaired by the author, was held in partnership with the U.S. government's interagency Wilderness Policy Council in honor of the 40th anniversary of the 1964 Wilderness Act in the United States. WPP is currently in the process of compiling the information generated by roundtable participants into a handbook on international wilderness law and policy. This handbook will provide a detailed guide for practitioners who are interested in developing a new wilderness law or policy, or who already have wilderness legislation but are interested in learning from approaches in other countries.

(b) *Indigenous Designations: The Native Lands and Wilderness Council.* Indigenous groups control hundreds of millions of hectares around the world and have the capacity to play a critical role in protecting the planet's wilderness. As a result, a key component of any review of policy mechanisms for wilderness protection must include indigenous participation. At the 2004 roundtable mentioned above, representatives from the Kayapo conservation

initiative in Brazil, and the Confederated Salish and Kootenai Tribes in Montana, USA, presented their conservation models. The interest generated by these presentations led to a commitment at the 8th WWC to establish the Native Lands and Wilderness Council (NLWC).

The NLWC was chaired by Terry Tanner of the Confederated Salish and Kootenai Tribes, as well as by Grand Chief Herb Norwegian of the Deh Cho First Nation in Canada, and Larry Mercurief, deputy director, Alaska Native Science Commission. The NLWC involved representatives from 30 indigenous groups from around the world and reviewed indigenous-led wilderness conservation initiatives on lands owned and managed by indigenous groups.

WPP will publish a compendium of case studies from the NLWC, providing examples to guide more indigenous groups interested in protecting their traditional lands. The council also initiated a network of indigenous groups around the world interested in indigenous-led wilderness conservation initiatives. Finally, a regional North American meeting of the Native Lands and Wilderness Council is in the planning stages, and will likely be held in Colorado with representatives from Mexico, Canada, and the United States. The NLWC is discussed at greater length in this issue in the article by Terry Tanner and Julie Cajune of the Confederated Salish and Kootenai Tribes in Montana.

(c) *Private Lands Wilderness Designations: The El Carmen Complex.* The private sector has sometimes played a central role in safeguarding wilderness around the world, usually in partnership with governments, grant-making foundations, and NGOs, but there have been very few

The overriding WPP goal is to advance information and tools that will contribute to wilderness and wild area conservation worldwide.

actual wilderness designations on private lands. WILD has been working to reverse this trend, including working with a private reserve in South Africa leading up to the 7th WWC in 2001 to establish the first-ever wilderness designation on private lands in Africa, on the Shamwari Game Reserve in the Eastern Cape Province. That wilderness area, approximately 3,000 hectares (7,500 acres) was such a success that a second private wilderness area of 15,000 hectares (37,500 acres) in the Sanbona Wildlife Reserve (owned by the same company) was announced at the 8th WWC.

Prior to the 8th WWC, WILD joined several partners, including Agrupacion Sierra Madre and CI, in facilitating an agreement between corporate partner CEMEX, Inc. and the Mexican government to declare the first official wilderness designation

in Latin America on private lands. This area includes 75,000 hectares (185,250 acres) on CEMEX's El Carmen complex in northern Mexico. Already a first for Latin America, and significant in that it involves a partnership between a corporation, NGOs and the Mexican government, this initiative has the potential to be precedent setting globally as the first private transboundary conservation initiative, because CEMEX also owns lands near Big Bend National Park in the United States. This initiative was presented at the 8th WWC, and is described in detail in the article by Patricio Robles Gil in the August 2006 issue of *IJW*, and summarized briefly in this issue of *IJW*.

Training Programs for Managing Wilderness

Management guidelines are necessary to ensure that protected wilderness retains its ecological integrity. WPP has begun to focus on wilderness management in two ways. First was to review experience with large-scale conservation initiatives through a range of presentations at the 8th WWC. The second was project based—contributing to the development of the tools to train more protected area managers in the use of wilderness management techniques. WPP will increase involvement in large-scale conservation initiatives and wilderness management training because it is central to the continued ecological integrity of the areas protected.

1. *Managing Conservation Corridors.* The 8th WWC featured presentations on large landscape conservation efforts, including the Yellowstone to Yukon Conservation Initiative, the Canadian Boreal Initiative, the Great Bear Rainforest project, conservation work by the Deh Cho

First Nation in the Nahanni in Canada, and the Amazon Basin. These presentations will be included in the 8th WWC's proceedings.

2. *Managing Protected Wilderness.*

Recognizing that wilderness designation is not sufficient in and of itself to secure effective wilderness protection, WILD has supported, facilitated, or contributed to new training programs, development of information, training exchanges, and courses for wilderness managers for many years. Examples include the sponsorship of several editions of the *Wilderness Management* textbook (Hendee and Dawson, 2002), facilitating attendance of managers from South Africa at U.S. government agency wilderness training, and facilitating the visits of U.S. wilderness managers to South Africa. At the 7th WWC, WILD and the Sierra Club sponsored a wilderness management training session attended by managers from seven African countries. WILD and WPP have focused on management training through contributing to three projects:

(a) *Global Wilderness Seminar for Government Agencies*—A training session hosted by the U.S. government's interagency Wilderness Policy Council at the 8th WWC and designed for government land managers from around the world. This seminar was requested by participants in the IUCN Wilderness Task Force meetings held in Durban, South Africa, at the World Parks Congress in 2003, and U.S. government officials volunteered to coordinate this effort at the 8th WWC. This session established an international network of government wildland stewards who will exchange information on wilderness

management. The event was attended by 200 wilderness managers from 17 countries.

(b) *8th WWC—Training for Professionals and Volunteers*—A university-accredited wilderness management training implemented by the Wilderness Action Group (WAG) South Africa and the University of Montana was held in Anchorage, Alaska, from September 24 to 29, 2005, involving 50 NGO representatives and other professionals. WILD is working with WAG to develop wilderness teaching materials, which, if supplemented with local expertise, could support wilderness management training sessions elsewhere in the world.

(c) *Kamchatka and Russian Far East*—WILD is working with the United Nations Development Program, the USDA Forest Service, the Arthur Carhart National Wilderness Training Center, the Wild Salmon Center, the Kamchatka League of Independent Experts, the Aldo Leopold Wilderness Research Institute, and others to create partnerships between U.S. and Russian wilderness experts for more effective management of Kamchatka's protected areas. In addition to strengthening partnerships between U.S. and Kamchatkan conservationists and land managers, WILD's objective is to facilitate a pilot wilderness management training in Kamchatka using WAG- and WILD-developed training materials.

3. WPP helped organize a panel discussion at the 8th WWC on Special Conditions in U.S. Wilderness Designation and Management: Pros and Cons of Emerging Trends. This standing-

room only panel discussion focused opposing views in dialogue on an important and ongoing issue in wilderness conservation, raising questions such as: What degree of compromise in naturalness should be allowed in order to secure legal protection for proposed wilderness? What are the implications for future management of the special conditions proposed?

**The Wild Planet Project—
Beyond the 8th WWC**

To date, WPP has sought to facilitate new research, presentations, and dialogue on topics as varied as the economics of wilderness tourism, freshwater wilderness assessments, and the first international handbook on wilderness law and policy. WPP is also stimulating new applications of existing research, such as Conservation International's

**The mission of WPP
is to generate new
wilderness
designations around
the world ... and to
enhance the
management of
wilderness
protected areas.**

analysis of wilderness and biodiversity-conservation priority-setting exercises.

This special publication attempts to summarize some of the state-of-the-art information that was presented at the 8th WWC. It is WPP's first progress report and is an effort to keep the momentum of wilderness work alive between Congresses. We are grateful to the large number of partners that help make this work possible. Please enjoy the following summary materials from the 8th WWC that WPP hopes to see expanded before the 9th WWC.

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THE WILD FOUNDATION, continued from page 8

Inevitably, at each WWC, policy makers and high-placed professionals from countries that have not previously recognized wilderness, begin to see the importance and advantages of implementing and integrating wilderness into their framework of protected areas. Once this realization occurs, these policy makers and other professionals need assistance to get their country—or state or agency—on track to developing a wilderness or comparable wildland protection system. They need the most current information and access to expertise.

In direct response to this, WILD designed The Wild Planet Project (WPP), a proactive initiative to help communicate, shape, and implement the key ideas, proposals, and information created out of each Congress. Between Congresses, WPP helps realize important initiatives by aiding WILD collaborators and key leaders in attaining their wilderness-related goals. WPP clarifies tools

and provides information to identify, designate, and manage wilderness in different regions, nations, and ownership regimes and reports progress on the various initiatives at the next Congress. WPP is a partnership-driven project, and of course embodies the innovation and collaboration that WILD insists upon. Wild Planet was launched by WILD in 2004. Read WPP's first progress report, under the direction of Cyril Kormos, WILD's vice president for policy, in the remainder of this publication.

WILD's Future

Since 1974 WILD has worked to protect and sustain wilderness worldwide by integrating the needs of wilderness and people. That's our past. And that's our future. The Wilderness Network of cooperating organizations is a growing family of partners—NGO, public, and private. Maybe there is a place for you and your wilderness work. For more information, see www.wild.org.

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Figure 12—Sheila Watt Cloutier, president of the Inuit Circumpolar Conference, addressing climate change impacts on native peoples of the North, 8th WWC, Alaska, 2005. Photo by Vance G. Martin.

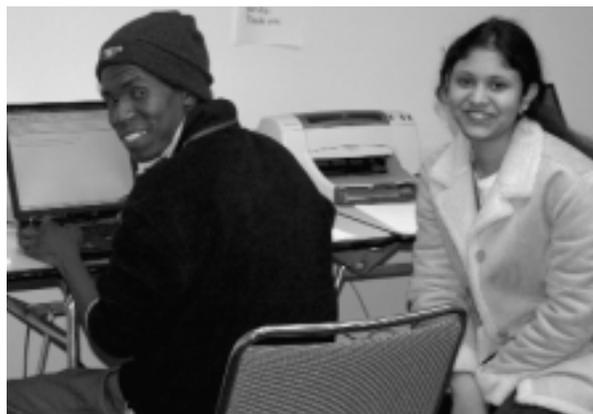


Figure 13—Matimba Baloyi (South Africa) and Juhi Chaudhry (India), two members of the large and active youth component at the 8th WWC, Alaska, 2005. Photo by Vance G. Martin.

The Millennium Ecosystem Assessment

A Framework for Wilderness Stewardship in a Directionally Changing World

BY F. STUART CHAPIN, III

THE WORLD IS UNDERGOING RAPID DIRECTIONAL CHANGES in most of the factors that control the properties of natural and managed landscapes. In the last 50 years, humans have changed ecosystems more rapidly and extensively than at any comparable period of human history, with even more rapid and extensive changes projected for the next half century and beyond (Millennium Ecosystem Assessment 2005). For example, human activities have substantially altered climate, atmospheric chemistry, biodiversity, land cover, the use of biological productivity, and the cycling of nitrogen at global scales. In addition, as the human population continues to grow, there will be both increasing pressures for use or conversion of current wilderness lands as well as increased need for the ecological and cultural values provided by wilderness to society at large. Given these changes in environmental, biotic, and socioeconomic controls, the future state of wilderness is certain to differ from what it has been in the past. Attempts to preserve wilderness simply by excluding management are therefore unlikely to sustain its essential values.

The Millennium Ecosystem Assessment (MEA) was initiated by the United Nations to assess the consequences of ecosystem change for human well-being and to develop the scientific basis for actions needed to enhance the conservation and sustainable use of ecosystems by society (Millennium Ecosystem Assessment 2005). Over a four-year period about 1,400 experts from around the world worked to address these goals. The MEA provides a useful framework to understand the causes and consequences of wilderness change and the important societal role that wilderness can play in an increasingly human-dominated world.

Wilderness is at one end of a spectrum of intensity of human interactions with ecosystems. The MEA identified several categories of ecosystem services (i.e., the benefits that society derives from ecosystems) that all ecosystems provide. *Supporting services* are the underlying ecosystem and population processes that are part of the essential fabric of all ecosystems. These include the cycling of water, carbon, and nitrogen, and the birth, death, and migration of organisms that determine local patterns of biodiversity. *Provisioning services* are the goods that people harvest from ecosystems (food, fiber, wood, natural products, and water). Although provisioning services are harvested most intensively from agricultural ecosystems, the production of berries, medicinal herbs, game animals, and water in wilderness are important to people who live or visit there. Ecosystems also provide *regulating services*, such as climate regulation, disturbance regulation, air and water purification, and disease regulation, that provide benefits to society well beyond the boundaries of a wilderness area. As the regulating services of managed ecosystems become degraded, the



F. Stuart Chapin, III

delivery of these services by wilderness becomes increasingly important. Ecosystems also produce *cultural services* that provide a sense of place and identity, aesthetic or spiritual benefits, and opportunities for recreation and tourism. Although all ecosystems provide this spectrum of services, wilderness tends to be particularly important in providing regulating and cultural services that are essential for long-term well-being.

A fundamental assumption of the MEA is that all ecosystems, including wilderness, are best understood as social-ecological systems whose properties are shaped by interactions between people and the land or sea. Some human interactions with wilderness are diffuse, such as the impacts of anthropogenic pollutants on remote lands or the existence



Figure 1—Alaska has always had human populations in its vast wilderness, and laws specific to these areas recognize and allow for native uses of wilderness in a manner not originally recognized in wilderness laws in the lower 48 states. Here, a native Alaskan elder near Kotzebue shows a cartridge bag made from a duck carcass. Photo by Vance G. Martin.

value that many nonresidents derive from simply knowing that wilderness exists. However, people inhabit most wilderness areas in their natural state. The Eurocentric concept of wilderness as an area where “man himself is a visitor who does not remain” (the Wilderness Act) has rarely characterized remote regions that we think of as wilderness (Watson et al. 2003). In Alaska, for example, people have inhabited remote areas for at least 10,000 years and have depended on wilderness as a source of subsistence resources and as a place to live. Although the tools by which Alaska natives interact with the land have changed to include rifles, snow machines, and motorboats, which in turn requires integration into a mixed cash-subsistence economy, there remains a strong cultural and economic dependence on the land (Chapin et al. 2004).

Given that wilderness areas will change, and the nature of these changes will be strongly influenced social-ecological interactions, how can we construct a framework for wilderness stewardship that embraces change as a process that brings both opportunities and challenges, rather than simply attempting to prevent change (Gunderson and Holling 2002; Berkes et al. 2003)? Based on the experience of the MEA, some general rules emerge that may prove useful (Chapin et al. 2004; Millennium

Ecosystem Assessment 2005).

Given that change is a natural feature of social-ecological systems, it is often beneficial to foster modest changes, rather than preventing those changes that make catastrophic events more likely. Fire suppression, for example, reduces the probability of wildfire in the short term but increases the probability of future larger fires. Crises or other large changes that do occur can be treated as opportunities to think outside the box for novel solutions to address future needs. Regardless of what happens, it is important to learn from change, because it is virtually certain that changes will continue to occur.

Sustaining diversity provides more options to respond effectively to changes that occur. For example, maintaining large management units with a wide range of ecological and topographic diversity provides opportunities for organisms to migrate in response to future climate changes rather than being trapped in a local preserve that becomes gradually less suitable as habitat (Elmqvist et al. 2003). Similarly, fostering cultural diversity in which people with different cultural ties to the land (e.g., subsistence users and backpackers) provides opportunities to interact with the land in different, but equally appropriate, ways.



Figure 2—Salmon is an important source of subsistence for native Alaskans. Most native Alaskans have a fishing camp and a hunting camp, such as where this drying rack holds salmon and a seal skin, on the coast north of Kotzebue. Photo by Vance G. Martin.

Planning for the long-term integrity of wilderness in the face of certain changes in climate, culture, and economy is a serious challenge but represents an opportunity to think creatively about the deepest values that underlie the human need to be a part of wilderness in an enduring fashion. Resident and nonresident users of wilderness must work together to define the limits to acceptable change and the attributes of wilderness that are most important to sustain.

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Figure 3—Warmer winters have allowed pests to move farther north. Spruce bark beetle has had a very destructive impact in some Alaskan forests, such as on this coastline in Halibut Cove, off Katchemak Bay. Photo by Vance G. Martin.

Wilderness and the Conservation of Biological Diversity

BY JEFFREY A. McNEELY

A Historical Perspective

Our early ancestors were part of the wilderness. Evidence suggests that Africa was our original home, where numerous lines of hominids evolved, diverged, thrived, and died out, leaving *Homo sapiens* at the end of our evolutionary line. It is interesting that the rate of species extinction in Africa is remarkably less than other continents, where humans arrived at a later stage in their evolution (Martin and Klein 1984). In Europe and Asia, early species of *Homo* included *Homo erectus*, *Homo neanderthalensis*, and *Homo floresiensis* (who survived until relatively recently on remote Indonesian islands). All used fire and were extremely successful hunters. The evidence further suggests that when *Homo sapiens* arrived on new continents, such as Australia and the Americas, numerous species became extinct, changing the prehuman wilderness character forever. Early humans also used fire to hunt, but the result was mainly the extinction of large mammals, such as the woolly mammoth, cave bear, and woolly rhino in the northern hemisphere, and a large number of giant kangaroos and other marsupials in Australia. Later, as humans spread into the Pacific, more than 1,000 species of birds were driven to extinction, including the giant flightless birds of New Zealand, known as moas (Diamond 1999; Flannery 1995).

Hunting and gathering peoples also conserved resources, using religion, taboos, or restrictions on hunting and fishing during certain seasons to adapt to virtually every

ecosystem on our planet (Suzuki and Knudtson 1992). Indigenous peoples also developed sophisticated understandings of animal behavior and medicinal plants, and became integral parts of the wilderness where they lived. Other cultures did not adapt, and died out.

Once agriculture began to develop around 10,000 years ago, the human relationship with wilderness changed, and people began to simplify ecosystems to grow relatively few, highly productive species. As agriculture spread, wilderness was reduced to smaller areas where agriculture could not support dense human populations.

We underwent another fundamental change in our relation to wilderness with the development of industrialization about 250 years ago, in particular with the discovery of oil as a source of energy in 1859. Industrialization and fossil fuels led to rapid human population expansion, from about 1.6 billion in 1900 to more than 6 billion in 2000, and to equally impressive growth in the global economy, with gross domestic product increasing from about US\$17 trillion in 1950 to more than US\$40 trillion in 2004. One effect of growing human dominance has been the growth of cities—today about half the world's population lives in cities.

Wilderness, Biodiversity, and the Modern World

Technological change—first with guns, later with trains, highways, and other



Figure 1—Deforestation in the southern Amazon. Photo by Cristina G. Mittermeier.

means—has also driven our changing relationship with the wilderness. Off-road vehicles, from four-wheel drive trucks to snowmobiles, have opened up vast areas, often with very damaging effects. The annual Paris to Dakar rally is a sad example of how even the most remote deserts can be torn up, disrupting fragile ecosystems that may take decades to recover.

These technological pressures reemphasize the importance of wilderness as a means of conserving biodiversity. We need wilderness to experience biodiversity as our ancestors once did. Not surprisingly, as modern consumer society increasingly separates us from wilderness, wilderness tourism becomes more popular. The fact that so many people are appreciating wilderness on foot (albeit with freeze-dried food, GPS, and nylon tents) is an indication of its function as an antidote to urban society.

Wilderness is an expression of culture: Wilderness will persist if humans ensure that it remains a significant element of our planet.

Wilderness also offers numerous biological benefits, the most important being the conservation of biodiversity. Wilderness provides habitat for wild relatives of domestic plants and animals whose genes are essential to maintaining food production systems. Wilderness also provides habitat to the plants and animals that generate essential medicines, and to the animals that provide sustenance to rural peoples. In addition, wilderness provides vital habitat to migratory species, and for the world's large predators, key elements of biodiversity that often cannot survive in close proximity to modern people. Wilderness areas also buffer against disease: As we encroach into wilderness, we are



Figure 2—Large mammals, such as this black bear in northern Mexico, are an important component of healthy wilderness areas. Photo by Patricio Robles Gil.

increasingly confronting new pathogens—from Ebola to SARS to AIDS.

Finally, in addition to mitigating the effects of climate change, wilderness also helps ecosystems adapt to climate change, a critical point as we pour greenhouse gases into the atmosphere. Natural ecosystems containing wilderness areas are far more likely to adapt than are the small areas of isolated habitats, and may provide sufficient habitat for various species to adapt to changing climate regimes.

Key Problems Facing Wilderness and Biodiversity

Among the many problems faced by those seeking to promote the biodiversity conservation function of wilderness, some of the most outstanding include:

- Tourism: how can we ensure that the growing numbers of visitors do not fundamentally change the character of wilderness areas, and in fact contribute to their conservation?
- How can we increase public support for maintaining relatively large areas of wilderness, and managing such areas in ways that maintain biodiversity?
- How can we address the eternal conflict between people and nature? Although many local and indigenous peoples have found ways of living in a sort of harmony with their

surroundings, modern consumer society has not.

- How can we slow land use change? People are increasingly moving into the remaining tropical wilderness areas, such as Amazonia and the Congo Basin. Evidence indicates that deforestation in Amazonia continues to accelerate, exceeding 15,000 square kilometers (5,791 sq. miles) per year.
- How can we keep invasive alien species out of wilderness areas? Globalization has led to the rapid movement of some species around the world, and the homogenization of biodiversity (Mooney et al. 2005). Invasive species are now recognized as second only to land use change as a threat to biodiversity, even in wilderness areas.

How to Conserve Wilderness and Biological Diversity

Conservation of wilderness around the world requires multiple approaches, each carefully tailored to the issues of the particular area. But generally speaking, wilderness can best be conserved by establishing solid links among biodiversity, ecosystem services, and human well-being. The Millennium Ecosystem Assessment recently provided a comprehensive overview of those links (MEA 2005).



Figure 3—Invasive species in Jorhat, Assam, India. Photo by Cristina G. Mittermeier.

One critical element is to recognize that wilderness is an expression of culture: Wilderness will persist if humans

ensure that it remains a significant element of our planet. This requires recognition that wilderness conservation is essential for conserving what remains of biodiversity. It also requires awareness on the part of decision makers around the world of the increasing relevance of wilderness in the context of climate change, and the need to increase support to wilderness conservation as a contribution to human well-being. A final, though somewhat paradoxical, element is the realization that wilderness areas will require active management to ensure that they can provide the full range of goods and services we desire.

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Figure 4—Glaciers are in retreat worldwide, such as this one in the Chugach National Forest in Alaska. Photo by Vance G. Martin.

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The Economic Value of Ecosystem Services from and for Wilderness

BY TRISTA PATTERSON

Introduction

In the Sierra Club classic *On the Loose* (1967), Terry and Renny Russell reject attempts to place economic values on wilderness, emphasizing that the true rewards of the wilderness experience are spiritual: the freedom of self-reliance and the uplifting beauty of wild nature. At the same time, citing Winston Churchill, they issue a key challenge: to learn the game one has to play for more than one can afford to lose. Some wilderness scholars are taking up this challenge by reexamining and reemploying economic tools they had long since dismissed.

Economic valuations of wilderness have concentrated on direct benefits (e.g., commodity goods, recreation) and nonuse benefits (e.g., existence, bequest) (Haynes and Horne 1997; Schuster et al. 2006; Cordell et al. 1998; Loomis 2000; Loomis and Walsh 1992; Loomis and Richardson 2001; Richardson 2002; Walsh et al. 1984; Walsh and Loomis 1989). Increasing public importance has been noted for *indirect* values from wilderness, such as ecosystem services (see figure 1) (Morton 1999, 2000; Cordell et al. 2003). Ecosystem services are the naturally occurring contributions to life support and quality of life that people normally do not have to pay for (Daily 1997; Costanza et al. 1997; de Groot et al. 2002). Actual typologies vary, however (see Boyd and Banzhaf 2005; Costanza et al. 1997; de Groot et al. 2002; Alcamo et al. 2003; Heal et al. 2005; Brown et al. 2006). They can be experienced *directly* (provisioning food, freshwater, and cultural and recreational opportunities), or *indirectly* (regulating floods or climate or supporting the other services through soil formation or nutrients) (Millennium Ecosystem Association 2005; Chapin this issue).

Creative experiments are bringing values of ecosystem services into the marketplace, including carbon markets, wetland and habitat banking, water temperature credits, certifications, and tax incentives (Wunder 2005). Market values have helped raise awareness for ecosystem service contributions to quality of life, and help harness funds for their protection. Achieving these outcomes for wilderness involves particular challenges. This article discusses four of these challenges.

Broadening the Methods

One challenge is that reducing a multifaceted issue such as wilderness to the market is by nature a subjective and exclusionary process (Funtowicz and Ravetz 1994; Funtowicz et al. 1999), one that will reflect only a subset of the many values associated with wilderness around the world. When Costanza et al. (1997) estimated the value of the world's ecosystem services as US\$33 trillion, 1.8 times the world's GDP, some logically wondered how people's willingness to pay could exceed what they had (Bockstael et al. 2000). The overreliance on certain methodologies can obscure the pos-

sibility that the value of the commons is greater than the sum total of all the things we own as individuals. In addition to neoclassical economic tools, social science deliberative and consensus methods, multicriteria and conjoint analysis, and ecological pricing (e.g., *emergy* and *exergy*) can elucidate and convey values from multiple perspectives (Patterson 2005). These are necessary to relating willingness-to-pay to the market, the market to the economy, and the economy to wilderness.

Distinguishing Growth from Development

The term *economic growth* is often used interchangeably with economic development (Daly 1977), but with different implications for wilderness (Czech 2000). *Growth* (a quantitative attribute) involves increasing economic activity, commonly a result of increasing population and/or per capita energy/material consumption. Technology often does not fully mitigate the impacts of growth, and sometimes we allow the negative impacts to be borne out in future generations. The increasing land areas and use intensity needed to support economic growth can ultimately compete with, or adversely impact wilderness. This occurs not only at geographic boundaries (White et al. 2000), but also with systemic changes in climate, species dynamics, and soil and water transport. In contrast, *development* (a qualitative attribute) can be

achieved by economic rearrangement, in theory improving the ability of wilderness and the human-made economy to coincide. This must be the center of our focus if economic tools are to be harnessed effectively from and for wilderness. Accounting ecosystem services from wilderness can help to distinguish these qualitative improvements.

Developing Creative Markets, Flexible Institutions

The characteristics of various goods and services affect the ease with which market-based tools can elicit their value. Marketed goods are most often *excludable* (a legal concept that allows an owner to prevent another person from using the asset), and rival (where consumption or use reduces the amount available for other people), whereas most ecosystem services are nonexcludable, and nonrival (see Daly and Farley 2004 for applications). To some extent, social agreements can engineer excludability or rivalness, or create a proxy (consider carbon “credits”) to make ecosystem services marketable. Wilderness (often on public land) requires additional creativity because most market-based mechanisms are salient to private lands. That said, offsets elsewhere can benefit the wildland network as a whole, and ecosystem services that are not marketable (e.g., biodiversity) can be bundled to one that is (e.g., water temperature credits).

Regulations (laws and standards), market incentives, information (e.g., certification), and institutional flexibility all influence the longer standing success of attempts to bring wilderness attributes to market. Simply because the market is trading carbon credits in quantity does not mean abatement is occurring. Market price for carbon was more than halved in April 2006 when European countries set first-round emission targets too high.

Cultivating Socially and Environmentally Just Markets

Links between wilderness and ecosystem services often involve broad spatial scales

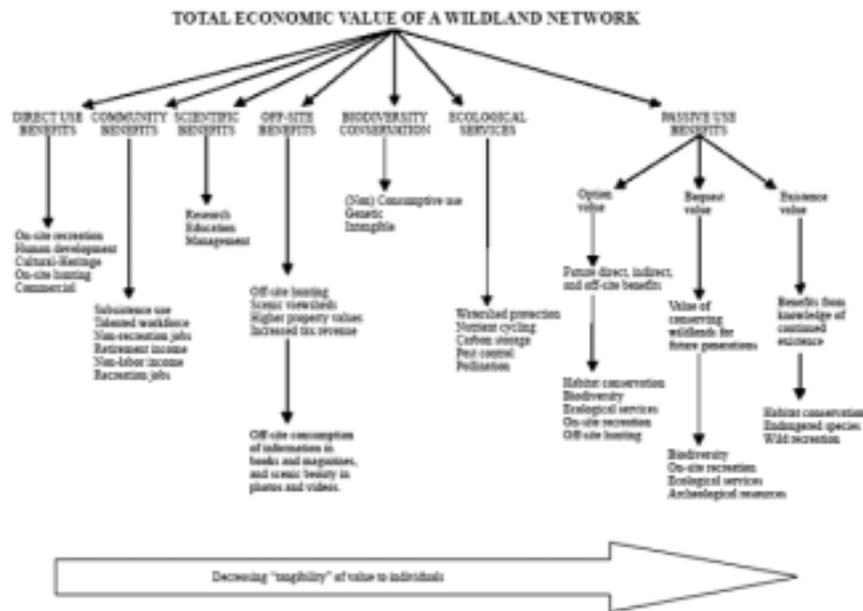


Figure 1—Morton’s (2000) total economic valuation framework for estimating wilderness benefits based on seven categories, arranged from left to right in order of decreasing tangibility to humans

that are rarely congruent with market and property boundaries. Time lags and feedback loops can also muddle the cause-effect relations needed to reflect marginal gains. Wilderness affects ecosystem services and vice versa: forest loss in Amazonia reduces rainfall in Texas (Avisar and Werth 2005), and carbon emissions from cities affect Arctic wilderness (Bachelet et al. 2005).

Conditions that satisfy market efficiency don’t include environmental sustainability or socially just distribution (Daly and Farley 2004). For the world’s poorest, ecosystem services provide “natural insurance” for people living in or near wilderness as has been documented in Peru, the Amazon (Takasaki et al. 2004), Knuckles Wilderness in Sri Lanka (Gunatilake et al. 1993), and others (Pattanayak and Sills 2001). Despite this, wilderness conservation has at times been cast as elitist, because demographic disparities exist in those who access it (Johnson et al. 2004). Exclusive focus on direct (rather than indirect or nonuse) benefits can obscure important distributive justice benefits of wilderness.

Conclusion

Wilderness contributes to indirect eco-

nommic value through broad-scale ecosystem services, buffering severity and directionality of environmental change, and helping us understand the way nature works. One barrier to stemming the losses of ecosystem services and wilderness alike is an inability to account for their nonmonetary contributions to quality of life, or the damage costs to be incurred when they are lost.

Broadening assessment of value to include the indirect (public) goods and services can prevent assets of “the commons” from taking a backseat to private profit, sensu Hardin (1968). This article has mentioned four challenges particular to wilderness: ensuring that the market and willingness-to-pay is not the only way we elucidate economic value, distinguishing economic *growth* (a quantitative goal) from economic *development* (a qualitative goal), employing creativity and skill with economic instruments and flexibility with social institutions, and looking beyond market efficiency to social and environmental justice issues.

The economic approach is not for everyone. If the Russell brothers had been asked to put a dollar value on wilderness, they probably would have responded with a public moaning. Yet the market is already valuing wilderness by way of a



Figure 2—Pristine rain forest in Guyana. Loss of rain forest in South America has global impacts, including decreasing rainfall in the southern United States.

very few commodified and direct-use values. Progress from and for wilderness is perhaps most hindered when we do not have any new or compelling tools with which to construct a vision for the future. More use can be made of economic instruments without eclipsing values in social, cultural, or ecological terms.

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Figure 3—Pollution from large cities affects both polar regions. This is especially true of fast-industrializing nations such as South Africa, which have many coal-fired power plants feeding the city of Johannesburg and surroundings.

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The Global Economic Contribution of Protected Natural Lands and Wilderness through Tourism

BY H. KEN CORDELL and J. M. BOWKER

Introduction

These are the first-round results of a project aimed at exploring at a global scale the complex relationships between protected natural lands, tourism, and economic growth. In this first round we mainly were interested in secondary sources of data and parameters from previously published studies. In presenting results for the 8th World Wilderness Congress, we provided summaries of the area of protected natural lands, estimates of the economic impacts stimulated by tourism drawn by these lands, and the spatial distributions of these lands and impacts around the globe. We were surprised to discover that only a very limited amount of research has been done previously to assemble the concepts, models, data, and summaries necessary for such an effort at a global scale. Thus, it was necessary for this project to tightly define the concepts of tourism and nature-based tourism that are relevant to assessing global impacts. Next it was necessary to identify and obtain contemporary best data enumerating tourists, their travels, and their spending. Finally, it was necessary to pull key concepts and data together for defining, quantifying, and spatially marking the economic activities associated with tourists traveling to visit and see protected natural lands.

Protected Natural Lands

The World Resources Institute (WRI) has listed eight ecosystem types ranging from marine to polar in its recent partnership publication, the *Millennium Ecosystem Assessment* (Millennium Ecosystem Assessment 2005). The Assessment reported that the structures of the world's ecosystems have changed more rapidly in the second half of the 20th century than at any other time in human history. The ecosystems that have been most significantly altered globally by human activity include marine and freshwater ecosystems, temperate broadleaf forests, temperate grasslands, Mediterranean forests, and tropical dry forests. Acceleration of human demands has resulted in unsustainable use of natural lands, with 60% now seriously degraded. In an effort to address degradation and conversion to cultivated or developed uses, a number of countries and organizations have been working toward greater protection. Between 1962 and 2003, the world listing of protected natural areas increased from 9,214 to more than 100,000 (United Nations Environment Programme 2003). The area in protected status rose from 2.4 million in 1962 to 20.3 million square kilometers (7.8 million sq. miles). Based on the Assessment, currently about 11.3% of the Earth's terrestrial area is now classified as protected. These protected lands are often a draw for tourism.



Mike Bowker (left) and Ken Cordell in Alaska.

Tourism

Tourism includes any number of activities that involve persons traveling to and staying in places outside their usual environment. The broad type of tourism most relevant to this article is nature-based tourism, which includes trips to see, photograph, or visit both protected and unprotected natural lands. Globally, tourism has been growing rapidly. Annually, millions of people travel to see and experience natural lands. In the process of traveling to and/or going into destination natural areas, tourists purchase transportation, lodging, food, souvenirs, and crafts and thus create economic impact. About 11.3% of the natural lands people travel to see are protected. The economic impact of protected land tourism accounts for the number of travelers, amounts they

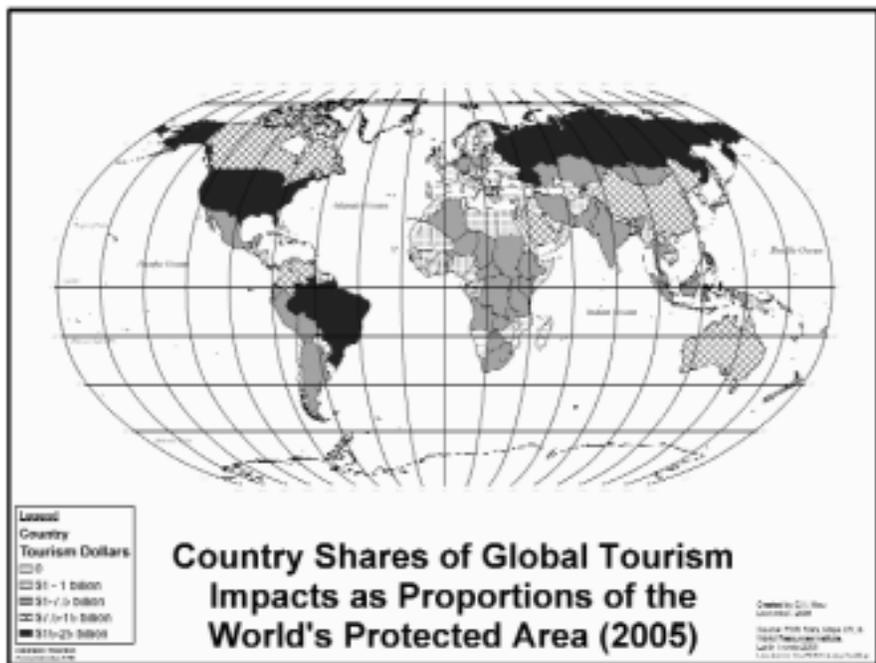


Figure 1—Global distribution of protected area impacts.

spend, and how their spending spreads through an area.

Approach

The approach adopted for this article was to obtain overall measures of the global economic impact of tourism, and then through several steps, to disaggregate the relevant economic measures into proportions attributable to the tourism associated with protected natural lands. The World Travel and Tourism Council (WTTC 2005), and its Oxford Economic Forecasting partner have been improving estimates of

the economic impact of tourism (Organisation for Economic Co-operation and Development 2001). Disaggregating their resulting Tourism Satellite Accounts was basic to our study as follows:

1. Identify the proportion of total world tourism spending motivated by travel to see and/or visit natural lands.
2. Identify the proportion of world nature-based tourism that is attributable to travel to see or visit protected lands.
3. Identify the proportion of world nature-based tourism that is

attributable to protection of IUCN Class 1b, wilderness.

4. Identify the proportion of world protected natural lands and wilderness that is attributable to protection in the United States.

Results

Total global tourism impact was estimated by the World Travel and Tourism Council at US\$6,201.5 billion in 2005. The literature indicates that approximately one-third of tourism travel is nature motivated. One-third of this US\$6,201.5 billion is US\$2,066.96 billion, which we considered to be a reasonable estimate of global nature-based tourism impact in 2005. Because 11.3% of global natural lands are protected, it seems reasonable to assume that 11.3%, or US\$233.6 billion per annum, of nature-based tourism can be attributed to natural lands that are protected. Using this same approach to disaggregation, we estimated that U.S. protected lands contribute US\$34.6 billion per annum to the U.S. and world economies. Of the U.S. protected lands, 14.3% is designated wilderness, which we estimate contributed US\$4.9 billion in 2005. As a cross-check, we compared our result with Filion's nature tourism estimate (Filion et al. 1994), and found it compared very favorably with our estimate of US\$2,067 billion of global economic impact from nature-based tourism.



Figures 2a and 2b—Nature-based recreation and tourism are growing quickly and becoming the leading industry for many communities in rural areas, whether it is in the cold polar regions such as at the annual Iditarod dog sled race in Alaska, or in the hot, mopane forests of Botswana. Photos by Vance G. Martin.

The Future

The World Tourism Organization (2005) projects tourism will continue growth well into the future. Trips taken for nature-based tourism in the United States are projected to grow between 110% and 145% by 2020 for many activities (Bowker et al. 1999). As the world's human population and economic means grow, unprecedented pressures are being placed on its natural lands as places of interest to see, photograph, visit, and admire. However, the natural attraction of many of these areas as places where tourists can see and experience natural settings is quickly being degraded. Will the economic contribution of protecting areas in the end outweigh the multiple pressures that have led to their continuing demise as natural areas? The world's human population is growing at around 6.2 million per month (U.S. Census Bureau 2005). In the face of this growth and its migration around the world, it is clear that different biomes in different regions of the world will encounter significant human impacts. With the world's protected and unprotected natural lands contributing more than US\$2 trillion per year, is it worth adding protection status to more of the world's unprotected natural lands?

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A project aimed at exploring at a global scale the complex relationships between protected natural lands, tourism, and economic growth.

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Social Benefits from Wilderness Experience

Recreation, Education, Personal Growth, and Healing

BY CHAD P. DAWSON and JOHN C. HENDEE

Introduction

Wilderness is valuable for its social benefits (Schuster, Tarrant, and Watson 2005), as well as for the ecological services it provides and the ecological systems it protects. The use of wilderness for education, personal growth, and therapy or healing is an important and valued benefit of wilderness experiences and is often provided in wilderness by organized groups (Hendee and Dawson 2002). The wilderness characteristics of a landscape (e.g., large-scale, long-term ecological processes; remoteness; limited impacts from human use) are integral to some activities and experiences because of the remoteness from everyday activities and the therapeutic values, the pleasures of reflecting on life without the everyday pressures, and the opportunity to meet the challenges of traveling and living under primitive conditions as our ancestors did. Some of these recreational and healing uses are dependent on designated wilderness areas or, at least, wilderness characteristics in the landscape.

The following is a short summary description of several categories of wilderness use that generate social benefits—recreation, education, personal growth, and healing (see figure 1). A large part of the information in these categories of wilderness use come from studies in the United States, but each category is also well represented and growing in most regions of the world where wilderness or comparable wildlands exist.

Recreational Use of Wilderness

For many people outdoor activity in a natural landscape featuring solitude or opportunities for primitive recreation (as the U.S. Wilderness Act provides)—a wilderness or wildland area with wilderness characteristics—is the ideal environment in which to “recreate.” And the activities they pursue in their recreational experience in wilderness are varied: hiking, camping, photography, nature study, fishing, hunting, rock climbing, orienteering, personal reflection, and more. The social benefits gained from wilderness recreation are reflected in the number and type of participants, the extent of use, and the trip expenditures generated. The most important concept is that wilderness recreation, like other voluntary leisure activities, leads to some level of psychological and social fulfillment for the participant, and that outcome leads to happier, healthier, and more productive members of society. This is a well-established concept.

The diversity of wilderness visitors ranges from those who take short walks and view scenery and wildlife in an hour to multiple-day backpackers, weeklong backcountry hunting or guided recreational trips with pack animals, or mountain climbing expeditions. However, most wilderness visitation takes place in small groups of friends

or family, and of short duration (one to three days) (Hendee and Dawson 2002). The growth in the amount of recreation demand and the increasing popularity of many forms of recreation in wilderness is due to U.S. population growth and a general upward trend in participation in many activities on all types of sites. Studies of visitor use of wilderness in the mid-1990s estimated at high-use federal agency sites, suggest that more than 14 million visitors went to the wilderness per year (Cordell 1999). Public surveys of the general population in recent years estimated that visitation was closer to 40 million per year (Cordell 2004). Some estimates of future growth suggest that wilderness use will continue to increase (2% to 4% per year), and that participation will continue across a wide range of activities (Hendee and Dawson 2002).

Recreation enthusiasts spending seven or more days in wilderness or primitive areas per year are a growing market segment based in part on participation in very active and physical activities. Improvements in and availability of high technology gear make travel possible in all types of weather conditions and terrain. Visitor use across the entire landscape makes it more difficult to manage use in general, as well as challenging to conduct search-and-rescue operations (see figure 2). Risk taking,



Figure 1—Students en route to a summit attempt on South Sister Mountain (10,358 ft./3,157 m) in the Three Sister Wilderness, a 286,708-acre (116,027-ha) area managed by the U.S. Forest Service in west-central Oregon. Photo by Chad Dawson.

exploring, and adventure activities are increasingly prevalent due to media exposure, easier access to sites, more available high technology gear, more opportunities for initiation into activities, and more training and skill-building opportunities (Hendee and Dawson 2002).

Educational Use of Wilderness

Wilderness is used for educational purposes—providing sites for field trips, study areas for student research, and a source of instructional examples. Some educational uses are more like recreational use: wilderness as a setting for teaching travel and survival skills. Many U.S. colleges and universities conduct field trips that teach wilderness skills as part of an outdoor education or recreation course. Some youth organizations teach outdoor-living skills, with an application in wilderness as a pinnacle of achievement. Whether such use is really dependent on wilderness may be questionable, but trips to wilderness as a test and demonstration of travel and living skills are common. What some experiential users and groups often need more than designated wilderness, is a large, unroaded area with wilderness or primitive conditions. Some courses teach wilderness values as well as low-impact use techniques, and this kind of

education would be considered more wilderness dependent.

There are no official estimates of educational use of wilderness, but research on wilderness-related courses in colleges and universities (Dawson and Hendee 2004) indicates that in 2002 there were 42 courses taught that took students for one or more days to a state or nationally designated wilderness, and 27 courses that took students on wilderness field trips for three or more days. Most courses focused on wilderness use, appreciation, enjoyment, and skills; some focused on legislation and policy; and other courses focused on wilderness protection and management. Some university courses use wilderness experiences to teach other subjects, such as leadership, policy, ethics, and ecology. Some of these activities and educational programs can be highly dependent on wilderness use.

Wilderness Use for Personal Growth and Healing

One of the ways many people are initiated into wilderness use, and gain training in primitive travel and living, is through participation in organized Wilderness Experience Programs (WEPs). One well-known example is Outward Bound. The number of WEP organizations and their clientele have grown

rapidly in the United States in the last two decades.

WEPs are organizations that take paying clients into wilderness or comparable lands to develop their human potential through education, personal growth (including leadership and organizational development), or therapy and healing (Friese et al. 1998). Research in the late 1990s suggested that WEPs were a large and growing use of wilderness and an emerging industry. One nationwide survey of wilderness managers found that, among those reporting WEP use in wilderness they administered, two-thirds said such use was increasing, and more than one-third expressed concern over environmental impacts of use by such groups or conflicts with other users (Gager et al. 1998). Because of their size and prospects for continued growth, permitting and dealing with wilderness use for education, personal growth, therapy, and healing by organized WEPs is a growing wilderness management challenge, yet it is also a growing opportunity for enhanced social benefits from wilderness. Many policy and management issues surrounding access to the wilderness affect these organized uses (Ewert et al. 1999).

Wilderness personal growth, therapy, and healing programs use various combinations of challenge adventure and reflective activities to help participants get in touch with themselves. Wilderness personal growth programs seek empowerment; they stretch participants' abilities and determination in wilderness activities to teach them that their capabilities exceed what they imagined, and, therefore, that they may also be self-limiting their performance back home in their daily lives. Wilderness therapy and healing programs seek behavioral change and restored normal functioning. They use the natural consequences of wilderness living and primitive skills to cleanse participants and restore normal functioning, with individual and group therapy as well as solo experiences to help connect participants with their inner selves as the ultimate source of their afflictions—and their recovery.

Wilderness is valuable for its social benefits, as well as for the ecological services it provides and the ecological systems it protects.

Although wilderness personal growth, therapy, and healing programs serve all age classes, adolescents and young adults are the most frequent participants, many suffering from substance abuse and addiction. Enhanced self-esteem and other variations of empowerment are the most consistently reported outcomes for individuals in studies of wilderness experience programs (Friese et al. 1996).

Mail survey studies (Dawson et al. 1998; Friese et al. 1998) have identified more than 230 personal growth programs, ranging from several large programs serving thousands of clients annually—Outward Bound, by far the largest, served about 30,000 clients in 1998—to many small programs serving fewer than 100 clients annually. A study by Russell et al. (2000) identified 38 wilderness therapy and healing programs; data from five of them projected a total estimate of 12,000 wilderness therapy clients in 1998 and generated 392,000 wilderness field days. The programs studied ranged from three to eight weeks in length and had higher leader-to-participant ratios in the field than many WEPs due to the need for clinical oversight of the process, which increases the cost of programs for wilderness therapy and healing (Russell et al. 2000). The studies suggest that the number of such WEPs are growing, and that increasingly medical insurance companies, social service agencies, judicial authorities, and school officials are turning to outdoor and wilderness treatment programs to help adolescents overcome problem behaviors such as substance abuse, resistant and defiant behavior, emotional adjustment issues, and psychological problems. Reflecting the growth in the

number of WEP's and WEP attempts to soften any stigma associated with the word therapy and broaden the range of healing programs, a group of highly respected programs has introduced the term outdoor behavioral healthcare to refer to this use, and they have organized into an Outdoor Behavior Health Industry Council to cooperate in uplifting industry standards.

Studies of WEP programs and their users document the attraction of wilderness for personal growth and healing uses, and their partial or complete dependence on wilderness to deliver program outcomes and achieve important social benefits. Is the use of wilderness for the education, personal growth, therapy, and healing of young people as important—or more important—than other uses? Increasingly, wilderness managers will face such questions in policy and actions that favor one kind of use over another when limiting use to protect wilderness naturalness and solitude.

Wilderness-dependent Experiences

Wilderness experiences have various meanings and benefits among different people and cultures. Wilderness and wildland areas are special places for human experiences, with immense appeal to many who believe that wilder-

ness environments invoke a restored emotional, psychological, and mental state due to the natural and undeveloped characteristics of the area, whether real or perceived. Humans have a deep historical and cultural connection with "wild nature," as we have been shaped through human evolution by it and, in turn, we have modified it. Whether a person has a direct experience with wilderness, views wilderness in a distant landscape, or reads about the adventures of others in wilderness—the human reaction to it is complex and forms the basis for many social benefits.

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Figure 2—The lower Sonoran Desert in the North Maricopa Mountain Wilderness is a remote and difficult place to access. This is a 63,020-acre (25,503-ha) wilderness area managed by the Bureau of Land Management in southern Arizona. Photo by Chad Dawson.

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Figure 4—Six months after three Kayapo men participated in the Native Lands and Wilderness Council at the 8th WWC, representatives from 19 of the 21 Kayapo villages met together for the first time to address growing challenges to the integrity of their indigenous reserve in the southern Amazon. Photo by Vance G. Martin.

strong tribal government structures in North America, and the existence of highly successful models, this regional meeting of the NLWC will identify and catalyze targeted, new commitments for wilderness set-asides, and management on tribal/indigenous lands in all three North American countries, for announcement at the 9th WWC. The meeting will help establish a North American network of indigenous wilderness managers and collect more models for dissemination around the world. Finally, this meeting will help solidify, give structure to, and expand the network of indigenous groups engaged in wilderness conservation in anticipation of the 9th WWC in Latin America.

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50 Years of Wilderness Experiences

BY ANDREW MUIR

MANY COUNTRIES HAVE DEVELOPED EXPERIENTIAL programs in wilderness designed to develop the leadership skills of the participants, to foster cohesiveness amongst a group, to encourage personal spiritual growth, or simply to understand nature a little better. However, few countries have taken this concept as far as South Africa. Indeed, South Africa has developed wilderness trails that are not only designed to encourage personal growth, but also to effect fundamental social and political change in a country undergoing a profound and sometimes painful transition. The incredible scope and impact of South Africa's wilderness trails—at the individual, community, and national levels—make the South African example deserving of special notice and a model for other countries. This article summarizes the work of two pioneers in South African wilderness trails: The Wilderness Leadership School and the Wilderness Foundation South Africa, who together have taken well over 100,000 people on wilderness trails.

Wilderness Leadership School

The origins of the Wilderness Leadership School date back to 1955 when the school's founder, Dr. Ian Player, learned of the American concept of wilderness. By 1958 half of the Imfolozi Game Reserve (now the Imfolozi-Hluhluwe Game Reserve) and a part of Lake St. Lucia had designated wilderness areas—the first officially designated wilderness areas in Africa.

Although the school was only formalized in 1963, the first group of youths was taken on a wilderness trail by game rangers in 1957 at Lake St. Lucia. During this time, Dr. Player came into contact with Magqubu Ntombela, an extraordinary game tracker for the Natal Parks Board, who became one of the greatest influences in Dr. Player's life. In 1959 Dr. Player and Magqubu Ntombela took the first official trail into the Imfolozi Wilderness Area through the heart of the early Zulu Kingdom: the area between the White and Black Imfolozi Rivers, where Zulu king Shaka undertook controlled hunting in the 1860s. Magqubu Ntombela's grandfather had been one of King Shaka's indunas (a chief), and Magqubu carried with him the oral history of the time. Enshrined in tribal tales were the old Zulu conservation practices, vital for an understanding of the culture and the land.

Hundreds of people and organizations have been involved in the school's growth, but the friendship between Dr. Ian Player and Magqubu Ntombela and all they stood for infused the school with its lasting spirit. Today, the Wilderness Leadership School offers trails in the following wilderness areas: Hluhluwe-Imfolozi Park, Greater St. Lucia Wetland Park, and the Ukhahlamba-Drakensberg Park and Inland. The school offers six kinds of trails:

1. Corporate Trails engage group dynamics as well as encourage personal growth. They are implemented in association with management training leadership



Andrew Muir. Photo by Margot Muir.

programs and universities, including the Foundation for Natural Leadership and Wits Business School.

2. Community Trails engage community leaders and youth to help elevate a community's environmental awareness. The Wilderness Leadership School is actively engaged in projects around community upliftment, AIDS/HIV awareness, and entrepreneurial skills development.
3. Scholar Trails target youth groups and offer opportunities for personal reflection and growth, physical involvement, and the experience of being in nature with a minimum of the usual accoutrements of urban life. These trails last five to 15 days.
4. Adult Trails, normally five days long, are a journey of self-discovery and connection with the Earth, so



Figure 1—We walk in silence on the Imbewu trails in Namaqua for a while so that we can absorb the atmosphere. Photograph by Ivan van Niekerk.

that participants may emerge with a sense of renewal, fresh insights, and newfound knowledge. Leaving cell phones and watches behind, carrying only basic equipment and food and bathing in rivers, participants experience the freedom of living with the minimum of sophistication.

5. Personal Growth Trails are similar in objective to the Adult Trails, but last 12 days, are held only in the Imfolozi Wilderness Area, and are restricted to four participants over the age of 28, and usually individuals who have already participated in an adult trail.
6. Wilderness Therapy Trails are run in conjunction with a therapist and comprise a seven-day wilderness trail in the Imfolozi, followed by a three-day workshop at a rustic venue.

The Wilderness Foundation South Africa

The Wilderness Foundation South Africa is represented on the board of the Wilderness Leadership School but also manages its own trails. These include Imbewu, Pride, The Opinion Leaders Trail, and Umzi Wethu.

1. The award-winning Pride Project is an experiential education program operating in South Africa's urban centers. This partnership provides wilderness

experiences for children from South Africa's townships. Pride is the product of a partnership between the Wilderness Foundation South Africa, the World Wildlife Foundation—Table Mountain Fund, South African Breweries, and Woolworths.

2. Imbewu is a joint effort with the Honorary Rangers of the South Africa's National Parks (SANParks) and the University of South Africa, designed to empower youth to work in (SANParks and their surrounding communities. Imbewu has established camps at Imfolozi, Kruger, Addo, Tsitsikamma, and Namaqua National Parks and is the largest national program of its kind. Youth are trained by elders

with decades of experience in parks or game reserves, and teaching takes place in home languages. Imbewu has fully subsidized more than 6,000 disadvantaged youths to go through this four-day program. A follow-up program, the Junior Honorary Rangers Orientation Course, was developed in 2001 to build on Imbewu's work.

3. The Opinion Leader Trail program brings together parliamentarians and key community environmental leaders on four-day trails to encourage greater environmental awareness, to help integrate conservation awareness into decision making, and to catalyze exchanges between senior policy makers and grassroots opinion leaders that might not otherwise take place. Participants in the OLT program consistently credit the experience in wilderness with the creation of a time and space for much-needed, constructive debate. Introduced during the change of government in 1994, this program has taken more than 200 opinion leaders and South African parliamentarians on trail, many of whom had no previous experience of a nature reserve or of conservation issues.
4. Umzi Wethu is the Wilderness Foundation South Africa's most recent and perhaps its most



Figure 2—A chance to exist for a period in the original, primitive atmosphere of wilderness. Photograph by Ivan van Niekerk.



Figure 3—Unique among residential AIDS orphans programs is the emphasis placed by the Umzi Wethu Training Academy for Orphans and Vulnerable Youth on time spent in the wilderness, as here in the Eastern Cape (South Africa). Photo by Debbie Gothan.

pioneering trails program. Its mission is to strengthen protected areas and communities by developing the employability and self-esteem of young people affected by HIV/AIDS and social breakdown. By 2014 the number of AIDS orphans and displaced youth will more than quadruple to approximately 4.7 million—even with a full roll out of antiretrovirals. A displaced generation of this proportion has profound implications for South Africa’s new

who live there. These orphans will lead brutal, short lives.

The Umzi Wethu Academy for Displaced Children in South Africa is a community-based initiative harnessing the healing power of nature to fulfill the potential of orphans and vulnerable children (OVC) displaced by HIV/AIDS. It engages the booming ecotourism sector in South Africa to generate jobs for trained and mentored OVC. The first Umzi

and rural based, using existing infrastructure and support services in urban settings and allowing for child heads of households to participate without causing disruption.

A Xhosa word for “homestead,” Umzi Wethu establishes a home base linked with local game reserves and parks that provides nurturing, community connections, life skills, vocational training, HIV/AIDS awareness training, and job placement services to teenagers orphaned by HIV/AIDS. Umzi Wethu intervenes in the lives of these stigmatized youth at a point when they become most vulnerable to destitution—especially for a child head of household—and harnesses the power of nature to generate change for a sector of South African society in desperate need of help.

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Figure 4—Umzi Wethu’s vocational training for the ecotourism industry is as essential to the program as is the leadership training in South Africa’s wilderness areas. Photo by Vance G. Martin.

South Africa has developed wilderness trails that are not only designed to encourage personal growth, but also to effect fundamental social and political change in a country undergoing a profound and sometimes painful transition.

democracy. The sheer volume of desperately poor and undereducated youth living alone in South Africa’s cities will make life dangerous and untenable for all

Wethu will be managed by the Wilderness Foundation and HOPE Worldwide Africa and will be based in Port Elizabeth. Umzi Wethu will be both urban

The Role for Wilderness in Biodiversity Conservation

BY MICHAEL HOFFMANN, CYRIL F. KORMOS, RUSSELL A. MITTERMEIER, VANCE G. MARTIN, and JOHN D. PILGRIM

A Human-dominated Planet and the Biodiversity Crisis

We live on a human-dominated planet. Over the past 50 years, we have changed the planet's ecosystems more rapidly and more extensively than in any other comparable period of time in human history. The most important direct drivers of change in ecosystems are habitat change, overexploitation, invasive alien species, pollution, and climate change (Millennium Ecosystem Assessment 2005).

From a human welfare perspective, these changes are vital because of the direct linkages between ecosystems and the essential services they provide, including provisioning services (e.g., food, freshwater, fuel), regulating services (e.g., climate regulation, flood regulation, disease regulation), and cultural services (e.g., spiritual, recreational, educational).

These same drivers are also leading to a significant, irreversible loss of Earth's biodiversity—the foundation upon which these ecosystem services are built. Current species extinction rates are 100 to 1,000 times higher than normal background extinction rates. According to the IUCN Red List of Threatened Species (www.iucnredlist.org), the global standard for the threat status of species worldwide, one in eight birds, one in four mammals, and one in three amphibians is at risk of extinction in the near future (Baillie et al. 2004).

Biodiversity Conservation and Where to React First

With biodiversity under siege and intact ecosystems crumbling, the challenge facing conservationists looms large: how to significantly slow the current and future loss of biodiversity? All biodiversity is important, and we fundamentally cannot accept any biodiversity as a lost cause. But with limited time and resources, we must be strategic about where we act first.

Biodiversity is concentrated in the tropics, with decreasing richness of species as one moves toward the poles. Similarly, threat tends to be concentrated in particular regions, and not necessarily where the human population is highest. There are various ways to estimate patterns of distribution of threat, for example, Stable Lights (lights at night), human population density, and maps of net forest loss. Sanderson et al. (2002) used four proxies for human influence: population density, land transformation, accessibility, and electrical power infrastructure. The resulting map of the "human footprint" reveals that around 83% of Earth's land surface is currently impacted by human beings. The top 10% of the highest scoring areas includes the world's largest cities. The minimum score (0) is found in large areas in the boreal forests of Canada and Russia, in the desert regions of Africa and central Australia, in

the Arctic tundra, and in the Amazon Basin. The majority of the world (about 60%) lies between these extremes in areas of moderate but variable human influence (Sanderson et al. 2002).

This uneven distribution of biodiversity and threat creates a dilemma. How do we identify regions or places where we have the least amount of time available in which to act to prevent massive losses of biodiversity? Over the last 15 or 20 years, considerable attention has been paid to setting global priorities and systematic conservation planning. The latter hinges on two primary concepts (Margules and Pressey 2000): irreplaceability (i.e., how many spatial options do we have available where biodiversity can be conserved?), and vulnerability (i.e., how much time do we have before that biodiversity is lost?). Irreplaceability and vulnerability combine in complex ways that enable conservation planners to identify regions and sites of high priority.

One influential example of this is the biodiversity hotspots (Myers et al. 2000; Mittermeier et al. 2004): those regions characterized by exceptional endemism (at least 1,500 native vascular plant species) and high threat (at least 70% original native vegetation lost). Currently, 34 such regions are recognized. The habitat within these areas once covered nearly 16% of Earth's terrestrial surface, but the remaining intact portions of the hotspots now only cover 2.3%.

Nonetheless, even within the habitat that remains, some 50% of all plants and 42% of all terrestrial vertebrates are endemic. Around three-quarters of the world's most threatened terrestrial vertebrates are found only in the hotspots. At the same time, about one-third of the total human population also lives in the hotspots (Mittermeier et al. 2004). Global studies such as these are useful for informing where conservation investment is most urgent to effect biodiversity conservation on a global scale.

Wilderness Preservation and the Conservationist's Dilemma

However, conservation action in such regions typically is not cheap. Areas of lower threat are generally more intact and cheaper to conserve, but herein lies the paradox: Areas of lower threat are generally also poorer in biodiversity.

On the other hand, such areas are of immense value because of the ecosystem services they provide, such as hydrological control, nitrogen fixation, pollination, and carbon sequestration. They also have great recreational and scenic value, and they serve as strongholds for many of the world's languages. Such regions, often called wilderness, offer excellent opportunities for preemptive action at low cost.

How, then, do the goals of wilderness preservation and biodiversity conservation compare? Would investing in wilderness divert scarce resources from the regions most in need of conservation? Is it possible to invest in preserving large tracts of wilderness, while at the same time benefiting biodiversity? One way to investigate this question is by comparing different approaches to identifying areas of low threat and relative intactness, and seeing where and how they compare with urgent priorities for biodiversity conservation.

The first attempt to map wilderness was generated by McCloskey and Spalding (1989) and launched at the 4th World Wilderness Congress. This survey relied on jet navigation charts to identify areas over 400,000 acres (161,943 ha) with no permanent infrastructure. The conclusion was that approximately one-third of

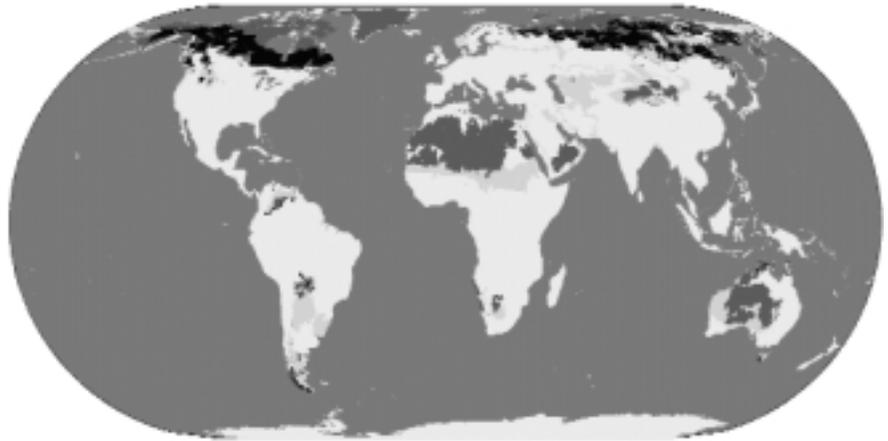


Figure 1—The overlap of regions identified as “wilderness” by Bryant et al. (1997), Sanderson et al. (2002) and Mittermeier et al. (2003), filtered based on biodiversity value using the global biodiversity conservation priority template of Mittermeier et al. (2003) to illustrate the overlap of approaches within areas of lower irreplaceability.

the planet consisted of wilderness.

In 1994, Lee Hannah and co-workers produced a GIS map of global human disturbance. The study produced a Habitat Index, with three categories: undisturbed, partially disturbed, and human dominated. Undisturbed areas retained primary vegetation and had population densities lower than 10 people per square kilometer (under 1 person per square kilometer for arid, semiarid, and tundra communities). Partially disturbed areas had secondary, but naturally regenerating vegetation with some agriculture. Human-dominated areas were urban or agricultural. The findings were that 52% of the planet was undisturbed, 24% was partially disturbed, and 24% was human dominated.

In 1997 the World Resources Insti-

tute identified forested regions that were primarily forested, large enough to support viable populations of all native species (including wide-ranging species), dominated by native tree species, and had a structure and composition determined mainly by natural events. The study found that only 22% of the planet's original forest remains as undisturbed “frontier forests” (Bryant et al. 1997).

A fourth study, by the Wildlife Conservation Society, builds on the Human Footprint project to identify the “Last of the Wild”: the 10 largest contiguous areas in the 10% of wildest areas in each biome in each biogeographic realm. Overall, 568 such areas were identified (Sanderson et al. 2002).

Finally, Conservation International defined wilderness regions as those



Figure 2—The overlap of regions identified as “wilderness” by Bryant et al. (1997), Sanderson et al. (2002) and Mittermeier et al. (2003), filtered based on biodiversity value using the global biodiversity conservation priority template of Mittermeier et al. (2003) to illustrate the overlap of approaches within areas of high irreplaceability.

If our aim, as conservationists, is the persistence of global biodiversity, then our sights must remain firmly targeted on those regions characterized by high threat and high biodiversity value.

retaining at least 70% of their original habitat (the converse of hotspots) and holding human population densities of fewer than five people per square kilometer (Mittermeier et al. 2003). This analysis identified 24 wilderness regions, including the Congo, which was included despite having a population density of 5.8 people per square kilometer. The analysis found that although 44% of Earth's land can still be considered wilderness, only five of these regions (their intact portions covering just 6.1% of land) are "high-biodiversity wilderness areas" holding more than 1,500 plant species each as endemics. These five "high-biodiversity wilderness areas" hold 17% of the planet's plants and 8% of terrestrial vertebrates as endemics.

Overlaying the regions identified as wilderness by each of the latter three most recent approaches (the only three to have institutional backing), we can examine how the goals for wilderness preservation might differ, and, more importantly, how the regions of agreed priority differ when filtered based on biodiversity value (using the global biodiversity conservation priority template of Mittermeier et al. 2003 as a filter; see Brooks et al. 2006 for methodology). In areas of low irreplaceability (Figure 1), the major areas of agreement are the tundra regions, the Magellanic Forests of Chile, and very small areas in the forests of Tasmania and the Pantanal. This result is not surprising given the relatively low rates of habitat conversion in these regions. There is also obvious agreement

on the desert regions (particularly the Sahara, Kalahari, Namib, Arabian, Central Asian, and Australian Deserts).

In areas of high irreplaceability (Figure 2) for biodiversity, the three approaches are unanimous in the importance of Amazonia, the Congo Basin, and New Guinea, which are still relatively intact compared with devastated regions such as the biodiversity hotspots. However, these same regions are experiencing, or have recently experienced, very high rates of net forest loss. Consequently, they are priorities because of their biodiversity, and because they are facing higher threat: Without conservation action they could become the biodiversity hotspots of the future.

In answer to our question about how the goals of wilderness preservation compare with those of biodiversity conservation, it is apparent that the spatial disparities between these regions mean that the goals of wilderness preservation, although significantly overlapping, do not align exactly with those for biodiversity conservation (Sarkar 1999). Nonetheless, at the very least, investment of resources in the high biodiversity regions of the Amazon and Congo Basins, and in New Guinea, would serve a dual wilderness-biodiversity purpose.

Conclusions

All biodiversity is important, and the value of wilderness is unquestionable. Wilderness provides essential ecosystem services for all of humanity. However, wilderness preservation cannot serve as a surrogate for biodiversity conservation, because of the pattern of distribution of biodiversity, threat, and human influence. If our aim, as conservationists, is the persistence of global biodiversity, then our sights must remain firmly targeted on those regions characterized by high threat and high biodiversity value. To do otherwise will result in the irreversible loss of large swathes of global biodiversity. Such a strategy, however, should be complemented by proactive interventions in wilderness regions that are also important for biodiversity conservation, given that these regions will

meet both biodiversity and wilderness objectives. Finally, within such regions, any land protected will not suffice. Rather, it is necessary to adhere to a systematic conservation planning framework to determine which parcels of land together will respond to threatening processes and minimize biodiversity loss.

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The Last Wild Waters

A Snapshot of the Remaining Freshwater Wilderness

BY MICHAEL L. SMITH

FRESHWATER IS THE MOST PRECIOUS MEDIUM for the conservation of species. Although freshwater habitats cover only 0.8% of the Earth's surface, they contain, for example, 31% of the world's vertebrate species (based on an original count of species that live in freshwater at some stage in their life cycle). If the numbers of fish species in fresh—and marine waters are compared on the basis of habitat volume, then freshwaters contain a concentration of fish species more than 5,000 times greater than that in the oceans. Clearly, the small portion of the Earth that is covered with freshwater plays a disproportionate role in supporting biodiversity.

Michael McCloskey (1995) judged wild rivers to be the benchmarks of the healthy freshwater habitats that best support wild species. As part of the World Wilderness Congresses (WWCs), he initiated an effort to identify the world's remaining wild rivers by examining maps for evidence of disturbance to banks, streambeds, and natural flow regimes (McCloskey 1995). The procedure aims to identify natural reaches of streams as short as 50 kilometers (31 miles) and is basic to the process of identifying targets for conservation.

In order to extend the analysis to include lakes and wetlands as well as streams, a complementary effort was undertaken for the 8th WWC to identify large areas of the world where surface waters are most likely to remain in natural condition. Recent evaluations of terrestrial wilderness used global data sets of human impacts (e.g., population density, intact vegetation) to identify areas that have been modified, and the remaining area was interpreted to hold the last remnants of wilderness (Sanderson et al. 2002; Mittermeier et al. 2003).



Michael L. Smith.

In a similar manner, this study identified large freshwater wilderness areas by eliminating watersheds that have suffered moderate to high levels of human activity. The primary units of analysis were the small-scale watersheds from *HYDRO 1K* (2003). These units were overlaid with binary data on human population density (*LandScan 2002 Global Population Database 2003*), and watersheds with more than three people per square kilometer were eliminated. Additional watersheds were eliminated if they contained more than 3% agriculturally modified land (data from *Global Land Cover Map for the Year 2000 2003*). Large-scale catchments were removed from consideration as freshwater wilderness if they were



Figure 1—Large-scale areas where freshwater habitats are likely to remain in wilderness condition. Map by Erica Ashkenazi, GIS and Mapping laboratory, Conservation International.

rated as moderately or strongly impacted by channel fragmentation or flow regulation (Nilsson et al. 2005).

This study found significant areas of freshwater wilderness only at the northern extremities of the continents and in a few small watersheds of South America (see figure 1). The loss of wild water in much of the tropics is associated with the fact that rivers have often served as avenues for human penetration of tropical forests (Sanderson et al. 2002). Although Amazonia and the Congo Basin are considered terrestrial wildernesses (Mittermeier et al. 2003), they are impacted by river channel fragmentation and human management of flow regimes. These effects are propagated over large distances within catchments. Southeast Asia, which has some of the world's highest levels of freshwater biodiversity, has long been impacted by agriculture and high human population density. It is now subject to high regulation of water flows at all scales.

In the Northern Hemisphere, population density and agriculture eliminate wild waters at mid-latitudes. Regulation of water flow extends human impacts to even higher latitudes, leaving only a few northward-flowing watersheds with large-scale wilderness conditions. This study shows that wild freshwater is the rarest form of wilderness and that it is the form that is disappearing most rapidly. We have only a few years in which to protect the remaining wild water.

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Global Land Cover Map for the Year 2000.



Figure 2—Most of the world's last free-flowing rivers are found in the far north, such as this river draining a glacier in the Chugatch National Forest, Alaska. Photo by Vance G. Martin.

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Ocean Wilderness

Interesting Idea or Ecological Imperative?

BY BRADLEY W. BARR

*The ocean is a wilderness reaching around the globe,
wilder than a Bengal jungle, and fuller of monsters ...*

—Henry David Thoreau, *Cape Cod*

THE CONCEPT OF WILDERNESS IN THE OCEAN is not by any measure new. Thoreau, in his storied walk along the shores of Cape Cod, found himself recalibrating his perception of wilderness. Could such an elemental and powerful wilderness experience be available to everyone who walks on a deserted beach? Perhaps, but that was in 1865—were he to walk these same beaches again, he would undoubtedly come away with an entirely different perspective.

The idea of ocean wilderness has been rediscovered a number of times: from Wallis (1958), who advocated ocean wilderness stewardship for the National Park Service; to Eissler (1968), who recommended an “underwater wilderness system”; to Smith and Watson (1979), who posited that “mankind should give serious consideration to underwater wilderness values”; to the more recent, thoughtful work of Sloan (2002). Each rediscovery has generated new information and critical thinking. Although there are few oceans or coastal areas formally designated as wilderness, the concept persists.

The concept has also appeared regularly at the World Wilderness Congresses (WWCs), beginning with a paper by Hance Smith at the 3rd WWC in Scotland (Smith 1984), and as a topic in plenary and special sessions at the 4th WWC (Foster and Lemay 1988) in Colorado, where the Congress adopted a resolution to carry forward with ocean wilderness. The recent 8th WWC included two plenary talks and three paper sessions addressing ocean issues. Although more comprehensive, and accompanied by some enthusiasm, it is too early to tell whether this Congress will yield more tangible progress in designation and management of ocean wilderness. However, there are signs of progress.

The 8th WWC provided an unprecedented opportunity to assess the status of ocean wilderness and to examine how to generate “traction” for applying the wilderness concept to the oceans. The presentations suggest that perhaps a foundation is being laid that can address some lingering questions and assist in identifying ocean wilderness areas once a consensus definition is articulated.

A key session at the Congress provided an overview of the extensive data and information base that can be used to identify ocean wilderness. Jen Molnar of The Nature Conservancy presented their Global Marine Habitat Assessment, which uses available, new, and synthesized data sets on ocean resources to identify areas of conservation importance, evaluate condition and threat, and assess conservation progress. Caterina D’Agrosa then described the Wildlife Conservation Society’s Marine “Human Footprint”



Bradley W. Barr swimming in the ocean.

Project, mapping the extent and intensity of human impact on the world’s oceans. Bill Chandler, on behalf of colleagues Lance Morgan and Fan Tsao of the Marine Conservation Biology Institute, reviewed work on the Baja to Bering Initiative. This initiative uses data on physical and oceanographic features, species distributions, and human uses, and calls on scientists and resource managers from the region to identify and map priority areas for conservation. Finally, George Shillinger of Conservation International (CI) presented CI’s work on the Eastern Tropical Pacific Seascape Initiative, a transboundary, multinational program developing a network of marine protected areas in this region.

Other excellent work on this topic includes an initiative by Natalie Ban and Jackie Alder at the University of British Columbia identifying potential coastal and ocean wilderness in British Columbia (Natalie Ban, personal

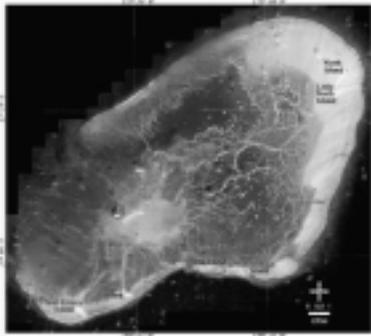


Figure 1—Satellite image of the Pearl and Hermes Atoll in the Hawaiian Islands Marine National Monument. Photo courtesy of National Office of Atmospheric Administration.

communication, September 19, 2005), and a global analysis entitled "Putting Ocean Wilderness on the Map: Building a Global GIS Atlas of Pristine Marine Environments" conducted by Ben Halpern and colleagues with the support of the National Center for Ecosystem Assessment and Analysis. As a result there is a growing body of information and analysis that can be used to identify areas that many would agree are "ocean wilderness."

Another session at the 8th WWC reported on the Ocean Wilderness Working Group sessions held at the International Wilderness Law and Policy Roundtable, held in Washington, D.C., in 2004, and sponsored by The WILD Foundation. Involving participants from the United States, Canada, Australia, and Chile, this group developed a working definition of "ocean wilderness," identified the key wilderness values preserved under this

definition, and identified a number of outstanding questions and issues. This work is a great leap forward in moving toward a consensus definition, an essential precursor to any workable ocean wilderness stewardship program.

The last session at the Congress involved a review of how wilderness waters are managed in U.S. fish and wildlife refuges. Some significant areas in coastal national wildlife refuges are designated as wilderness under the U.S. 1964 Wilderness Act, and the U.S. Fish and Wildlife Service is leading the way in enhancing stewardship and preservation of these waters. Although the theoretical data and policy analyses are a necessary element of moving forward, the practical experience of refuge and other resource managers provides a grounding for the more hypothetical and speculative exercises.

Ocean wilderness is an interesting, perhaps even compelling idea, and many over the years have pondered the issue, made contributions to the body of relevant work, and offered impassioned entreaties for designating wilderness in the oceans. But is it an ecological imperative? Only a handful of sites have been formally designated, and of those, few if any are functioning as wilderness (Clifton 2003). The critical question is whether there is real value to ocean wilderness. Are there resources and values that can only be preserved by a wilderness designation? It would seem, on land, that wilderness has undeniable value. Can the oceans be that different?

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Figures 2a and 2b—The growing attention to the marine wilderness concept will eventually address escalating threats to marine habitat and resources, from tropical to polar regions. Photos by Sterling Zumbrunn.

The Native Lands and Wilderness Council

BY TERRY TANNER and JULIE CAJUNE

Background

From time immemorial the Salish, Pend d'Oreille, and Kootenai people have honored their relationship with their aboriginal homelands. Although the 1855 Treaty of Hell Gate drastically reduced their land base, the tribes maintained their stewardship role with their remnant homeland. Tribal leadership and governance evolved to address sovereignty issues, including land and resource management, and in 1935, the tribes adopted a constitution that created a 10-member Tribal Council. Since that time, the Tribal Council has been responsible for conservation decisions.

With the past experience of a Bureau of Indian Affairs Forestry Program, and the continuing proposal to log the Mission Mountains, tribal members organized to voice their concerns to the Tribal Council. Through the leadership of three native grandmothers (Yayas) and tribal elders, the Confederated Salish and Kootenai Tribes (CS&KT) in Montana created the 29,150-hectare (72,000-acre) Mission Mountains Tribal Wilderness in 1975. This area protects a spectacular stretch of Rocky Mountains, rich in wildlife and cultural significance. The guidelines for management of the Mission Mountains Tribal Wilderness are in some instances even more stringent than those for federal wilderness lands, and specify that one central element of their wilderness designation is the preservation of tribal culture. The CS&KT also established a separate designation for two sites exclusively for tribal member use. These restricted areas make up a little more than 38,040 hectares (94,000 acres) and are strictly protected as natural areas. The Mission Mountains Wilderness also includes a 4,048-hectare (10,000-acre) grizzly bear management area protecting seasonal feeding sites, which is off limits to everyone during feeding times. In recognition of the excellent management practices on these lands, the Mission Mountains Tribal Wilderness is listed on U.S. Forest Service maps.

The WILD Foundation has joined in partnership with the CS&KT for many years to raise awareness of the important conservation work the CS&KT have done on their tribal lands. One product of this partnership is the publication *Mission Mountains Tribal Wilderness Area*, compiled by Terry Tanner and David Rockwell (available through WILD's online bookstore at www.wild.org). This is the first publication of its kind, detailing indigenous management for wilderness values, and is the first in a projected series of similar publications focused on encouraging further designation and management of wilderness on indigenous-controlled territory.

The Native Lands and Wilderness Council

The initial groundwork for the Native Lands and Wilderness Council was laid in 2004 at WILD's Roundtable on International Wilderness Law and Policy in Washington,



Terry Tanner, Confederated Salish and Kootenai Tribes

D.C., which was attended both by Terry Tanner, of the Confederated Salish and Kootenai Tribes, and by Barbara Zimmerman, director of the Kayapo conservation project at Conservation International. At that roundtable, chaired by Cyril Kormos, The WILD Foundation's vice president for policy, both the Confederated Salish and Kootenai and Kayapo models for wilderness designation were presented as highly successful and innovative complements to designation and protection of wilderness by national governments. The immediate potential for much more large-scale wilderness protection around the world via indigenous management of indigenous and tribal lands was also emphasized. Indeed, with hundreds of millions of hectares under indigenous control and/or ownership, and much of that land in a wilderness condition, the potential for indigenous



Figure 1—The Mission Mountains Tribal Wilderness Area on Confederated Salish and Kootenai tribal lands in Montana, U.S.A., declared more than 30 years ago as the first designated wilderness on Native American land. Photo by Vance G. Martin.

wilderness conservation around the world is enormous.

Both models generated considerable interest from roundtable participants, and both CS&KT and Kayapo representatives agreed that there was a strong basis for more discussion and further contact. To help facilitate this continued discussion, WILD sought and obtained funding from the Ford Foundation, the Christensen Fund, and the Canadian International Development Agency to hold a Native Lands and Wilderness Council (NLWC).

The NLWC first met at the 8th World Wilderness Congress (WWC), and was convened and chaired by Terry Tanner of the Confederated Salish and Kootenai Tribes (Flathead Reservation, Montana, U.S.A.), Grand Chief Herb Norwegian of the Deh Cho First Nation in Canada, and Larry Mercuriel, deputy director, Alaska Native Science Commission (and an Aleut who coordinates the Bering Sea Council of Elders).



Figure 2—The authors, far right, facilitating the Native Lands and Wilderness Council at the 8th WWC, in a session involving delegates from Mozambique, Congo, and Zimbabwe. Photo by Vance G. Martin.

The first meeting of the NLWC involved approximately 100 representatives from 25 indigenous groups from around the world and specifically focused on indigenous-led wilderness conservation initiatives on lands owned and managed by indigenous groups. Participants discussed the appropriateness of the term wilderness in an indigenous context, the importance of wilderness conservation to their efforts to maintain their social and cultural integrity, and the value of wilderness as a source of income.

Participants emerged from this meeting with great enthusiasm, and the CS&KT are now working with WILD to raise funds for three follow-up activities: (1) a compendium of case studies emerging from the first meeting of the NLWC; (2) an interim regional meeting of the NLWC in North America in 2007 or early 2008, in anticipation of a second global meeting of the NLWC at the 9th World Wilderness Congress (potentially in 2009); and (3) a network of indigenous groups around the world that have taken the lead in establishing wilderness conservation areas on their lands.

The compendium of case studies will provide an essential guide to indigenous groups interested in protecting and managing their traditional lands via a wilderness designation, and demand for this publication is very high. WILD will publish the 12 case studies presented at the 8th WWC and disseminate them to indigenous groups around the world.

The Interim Regional Meeting of the NLWC will also provide an important stepping stone to a potential 9th WWC, probably in Latin America,

and a very useful way to continue the NLWC's work in the short term. Subsequent to the 8th WWC, NLWC cochair Terry Tanner consulted with other tribes, and confirmed strong interest in a regional meeting involving North American indigenous groups. Tribes from the United States, First Nations from the boreal regions in Canada, and indigenous groups from northern Mexico will be invited. The National Congress of American Indians and the Native American Fish and Wildlife Society are potential partners in the U.S. planning. This regional NLWC would be a four-day meeting, held in 2007 or early 2008, most likely in Denver, Colorado. Proposed cochairs are Terry Tanner, Confederated Salish



Figure 3—Fishing in the Mission Mountains Tribal Wilderness Area requires a tribal permit; some areas are open only to tribal members, others to anyone with the proper permit. Photo by Vance G. Martin.

and Kootenai; Don Aragon, tribal chairman, Wind River Shoshone; Herb Norwegian, Deh Cho First Nation; and a Mexican indigenous cochair to be determined.

An interim regional meeting of the NLWC in North America is particularly appropriate given the many examples of wilderness management by North American indigenous groups that were not presented at the 8th WWC, such as the White Mountain Apaches and the Shoshone in the United States, or First Nations initiatives in the Muskwa Kechika and Great Bear Rainforest in Canada's British Columbia. Given the

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Private Sector Wilderness

An Important New Direction

BY CYRIL F. KORMOS and VANCE G. MARTIN

LARGE INDUSTRY, ESPECIALLY IN THE EXTRACTIVE SECTOR, is often criticized for its negative impacts on the environment, but it is also true that the corporate sector, as well as other private landholders, have often played an important role in safeguarding wild areas around the world. These efforts have usually been through partnerships with governments, grant-making foundations, and nongovernmental organizations (NGOs), with relatively little in the way of practical wildlands conservation on corporate-owned lands. Encouraging direct private sector stewardship, with appropriate oversight or certification, represents a significant area of potential growth in protected areas for wilderness conservation.

From a private sector perspective, significant benefits accrue to the corporate image by engaging in wilderness conservation, particularly in light of growing public recognition of environmental problems. Employee morale can be boosted through corporate commitment to wilderness, especially when corporate lands are also used for team building and outdoor leadership exercises.

There are many examples of de facto wilderness conservation by corporate and other private landowners in many different countries. In the United States, there are achievements across the country, for example, in privately owned forests in the Northeast and on vast private ranches in the West. A particularly good overview of the role of private philanthropy in conserving wildlands was presented at the 8th WWC by Tom Butler (Martin and Kormos, eds., *Wilderness, Wildlands, and People: A Partnership for the Planet*, Fulcrum Publishing, forthcoming 2007). Butler's work was funded by the Deep Ecology Foundation. This private foundation was established by Doug and Kris Tompkins, former corporate leaders now living and working in Chile and Argentina, who have done some of the most impressive private philanthropy-driven wildlands conservation in the world.

Corporate Wilderness Ethic

One of the objectives of The Wild Planet Project (WPP) is to promote the wilderness concept per se, as well as to achieve practical, measurable results. Therefore, when we use the term private sector wilderness designation, we do so with some specific criteria in mind. We applaud and encourage any effort that conserves wildlands; however, for WPP to label a project as a wilderness initiative, landowners must do more than simply use the word wilderness to describe their land or their conservation work.

There first must be a wilderness ethic with a genuine interest and commitment by the landowner to promote and conserve wilderness values (e.g., ecological, social, cultural), as opposed to simply wanting to create a hunting preserve or a tourism destination. Second, a wilderness management plan needs to be developed for conserving

and, where possible, enhancing wilderness values and restoring the wilderness character by removing fences, structures, and so forth, and "rewilding" as much as possible, including the ecologically appropriate reintroduction of wildlife. Finally, the landowner should utilize some type of legal mechanism, such as an easement or servitude in partnership with a conservation NGO or government agency, to protect the area's wilderness values for as many years as possible.

South Africa

WILD has been promoting the idea of private sector wilderness designations for several years. South Africa proved a fertile area in which to start this idea. It is a country of unique biodiversity values and is the only nation that has within its borders an entire floral kingdom (Cape Floristic). The nation also has a historic and strong commitment to private sector conservation, with 75% of the country's wildlands under private ownership.

Shamwari Game Reserve, a private game reserve in Eastern Cape Province, South Africa, has been voted the Outstanding Eco-Tourism Destination in South Africa. Shamwari is well known and respected for its commitment to restoring wildland values to previously degraded farmlands. In partnership with the Wilderness Foundation South Africa, WILD worked with Adrian Gardiner, owner and operator of the



Figure 1—A spectacular sky island in the El Carmen complex in northern Mexico owned by the CEMEX Corporation.
Photo by Patricio Robles Gil.

Shamwari Game Reserve, to develop a management plan that zoned the reserve into four areas—wilderness, roaded natural, rural, and breeding centers. This collaboration resulted in the first-ever wilderness designation on private lands in Africa (announced at the 7th WWC in Port Elizabeth, South Africa, in 2001), in which 18% of the reserve (2,915 ha/7,287 acres) is managed as wilderness under legal servitude with the Wilderness Foundation. Acting on the success of this original model, a second, 15,000-hectare area (45,000 acres), this time in the Sanbona Wildlife Reserve, Western Cape Province, South Africa, and also owned by Adrian Gardiner, was announced at the 8th WWC in Anchorage, Alaska.

Latin America

Based on this experience, WILD is now working with Agrupacion Sierra Madre, Conservation International, The Nature Conservancy, and other NGO partners to establish a certification mechanism for wilderness areas on private lands in Mexico. This coalition is working with the government of Mexico to establish a wilderness designation for lands under various ownership regimes and with different values to protect; this effort constitutes the first official wilderness

protected area classification in Latin America.

The first designation of wilderness in Latin America was in Mexico on private lands owned by CEMEX, Inc., one of the world's largest cement producers. This wilderness area has a core 30,365-hectare area (75,000 acres) on CEMEX's El Carmen complex in northern Mexico and is located in the far north of the eastern Sierra Madre mountain range. CEMEX owns a total of almost 121,458 hectares (300,000 acres) in this area through a

series of land acquisitions over time, and continues to purchase parcels extending into south Texas, adjacent to Big Bend National Park (United States) and Black Gap Wildlife Management Area (Texas). The region includes numerous and spectacular "sky islands," mountains rising steeply from desert to high mountaintops covered in temperate forest—creating a very biologically diverse landscape. It has 500 plant species, 400 bird species, 70 mammal species, and 50 types of reptiles and amphibians, and is included in Conservation International's global priority list of High Biodiversity Wilderness Areas.

An additional, unique aspect of the El Carmen-Big Bend Corridor initiative is that it is likely the first transboundary protected area owned by a private company and managed to preserve ecological values. The scope of the El Carmen-Big Bend Corridor vision is immense, potentially involving up to 4 million hectares (10 million acres) of land

in a mosaic of ownership that would include corporate lands, private ranches, ejidos (communal lands), U.S. national parklands, and state of Texas conservation areas. Along a border best known for negative news stories of smuggling and illegal aliens, this is an extremely positive story with significant implications for conservation, wilderness, and international politics.

Conclusion

Although these South African and Mexican partnerships are initial steps, they have been well received by corporate partners, as well as by the NGO community and government protected area agencies. Conservation on private lands is nothing new, but establishing a new wilderness ethic led by corporations on their own lands has significant potential to help save the planet's last wild places.

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Figure 2—A group of hikers on a trail in the Shamwari Game Reserve, which contains Africa's first private wilderness designation.
Photo by Vance G. Martin.



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