

Support Is Building for Global Wilderness Conservation

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Authors Vance G. Martin (left) and Cyril Kormos (right).

Wilderness conservation has always been a contentious issue, even more than the creation of national parks or other protected areas. Many reasons account for this reality, including a negative response by some development advocates to the idea of leaving wildlands essentially untouched, the fact that wilderness is sometimes misperceived as being antipeople, or that it is mistakenly regarded as a distraction from what are considered to be more pressing sustainable development concerns.

Despite these historical objections, new evidence in support of wilderness conservation makes us optimistic. In this article we review some recent information documenting wilderness values and demonstrating its expanding, practical appeal in developing as well as developed nations. This new information supports the growing idea that wilderness

protection, through very large parks that include de facto wilderness within their boundaries and other explicit wilderness designations, is viable and valuable. Positive change for global wilderness is occurring. In support of this development, the following is a summary of some new wilderness initiatives and information, beginning with an overview of some important prowilderness actions around the globe.

New International Wilderness Conservation Initiatives

The government of Gabon announced its decision at the World Summit on Sustainable Development (WSSD) in September 2002 to set aside 10% of its land surface in a new national park system covering 2.6 million ha (6.4 million acres). This decision is remarkable because of the size of the proposed system, much of which is substantially intact rain-forest ecosystem. It is also remarkable for its economic implications. Recognizing that oil revenues in Gabon are declining, President Bongo has chosen to focus on conservation and tourism as sources of revenue, rather than turning to logging for a short-term fix. Also important is the strength and diversity of the coalition behind the initiative. Besides the big NGOs one would expect and whom we applaud—Conservation International (CI), Wildlife Conservation Society, World Wildlife Fund (WWF)—also working closely with the government of Gabon and local and regional NGOs is the U.S. administration, much criticized for its stance on environmental issues. Secretary of State Colin Powell and two of his assistant secretaries visited Gabon, as well as Republican members of The WILD Foundation's Congressional Advisory Committee. As a result, at the WSSD in Johannesburg, Secretary Powell committed U.S. funding and expertise to Gabon and a wider Congo Basin Initiative. Additional congressional hearings

have been held, and a further appropriation is being considered.

Similar to the Gabon initiative is the government of Suriname's decision in 1998 to set aside 1.6 million ha (4 million acres) of pristine tropical rain forest as the Central Suriname Nature Reserve (CSNR), bringing the nation's protected area to 10% of its land surface. Suriname's was also a decision to forego logging and other extractive industry revenue in favor of a policy of conservation-based income. The CSNR was established through a joint venture between the government of Suriname, CI, the Global Environment Facility (GEF), and the United Nations Development Programme. The CSNR is now a World Heritage site, and a trust fund has been established for its long-term management.

Also announced at the WSSD was a major new Amazonian initiative by the government of Brazil in cooperation with the World Bank, the GEF, and WWF. This initiative, launched with the creation of the largest park in the world (the almost 4-million-ha [10-million acres] Tumucumaque National Park), will establish 50 million ha (124 million acres) of new federal protected areas over the next 10 years. The Tumucumaque National Park is especially important because it protects one of the last roadless areas in the Brazilian Amazon, and one of the wildest parts of the planet, as de facto wilderness.

Wilderness conservation is also making strides in southern Africa, in particular with transboundary protected areas. Since the 1997 creation of the first official transfrontier park in Africa, the Kgalagadi Transfrontier Park between Botswana and South Africa, several major transboundary projects have gained momentum. Among them is the Great Limpopo Transfrontier Park, officially created in 2002. This 3.5-million-ha (8.6-mil-



Figure 1—Futi Channel, a wetland area linking southern Mozambique and South Africa. Photo by J. Culverwell.

lion-acre) area encompasses Kruger National Park in South Africa, Gonarezhou National Park in Zimbabwe, and Limpopo National Park in Mozambique, thus potentially reopening migratory routes for several large mammal species. In an even more recent initiative, South Africa, Swaziland, and Mozambique began working toward establishing a park linking their countries.

Another initiative in South Africa will expand the Baviaanskloof Wilderness Area to create a larger Baviaanskloof Mega-Wilderness Complex. This proposal, launched at the 7th World Wilderness Congress (WWC) in 2001, is critical to protecting the biodiversity of the area. Once again, it reflects a strong commitment among local governments, NGOs, and international organizations, respectively the Eastern Cape provincial government, the Wilderness Foundation (South Africa), The WILD Foundation, CI, and the GEF (Martin and Muir in press).

This list of projects conserving global wilderness is not comprehensive; it

ignores such important initiatives as the Palmyra Atoll in the South Pacific; the Cardamom Mountains in Cambodia; a large debt-for-nature swap and a new park in the Cordillera Azul in Peru; the Adams, Paparoa, and Rakiura (new wilderness) designations in New Zealand; and the Spergeibit Wilderness National Park in Namibia, just to name a few.

These projects and this list are impressive. They represent progress and they feed our optimism. These new wild parks and reserves represent a fraction of what needs to be done globally to protect the planet's last wild places, but they are evidence that conservation can be at the heart of national economic development strategies, offering an alternative to traditional extractive industries.

How Much Global Wilderness Is Left?

There have been four major assessments of how much global wilderness is left, each varying in its criteria for determining what would qualify and each coming up with a different estimate of how much wilderness is left.



Figure 2—Waterway and dense tropical rain forest of Gabon. Photo by Vance G. Martin.

Collectively they provide critical information about the world's remaining wild area.

The first global wilderness assessment was the 1987 wilderness survey by McCloskey and Spaulding, presented at the 4th WWC in the United States (McCloskey and Spaulding 1988). That Sierra Club survey, entitled "A Reconnaissance-Level Inventory of World Wilderness Areas," analyzed jet navigation charts to identify areas larger than 400,000 ha (161,943 acres) with no permanent human infrastructure. The study concluded that approximately one-third of the planet's land surface was still in a wilderness state. The author's explicit intent was to provide an accurate estimate that would provide the basis for further study.

Building on the McCloskey and Spaulding survey, the 1994 study by Hannah et al. published in *Ambio* produced a GIS map of global human disturbance in natural ecosystems. This study derived a Habitat Index,

and used a three-category scale—undisturbed, partially disturbed, and human dominated—to map the results. Undisturbed areas had primary vegetation and population densities lower than 10 people per sq. km. (and under one person per sq. km for arid/semiarid and tundra communities). Partially disturbed areas had secondary, but naturally regenerating vegetation and at least some agricultural development. Human-dominated areas were urban or agricultural environments. The minimum units mapped were 40,000 ha (98,000 acres). Mixed units were mapped using the dominant land cover, and aggregated into 100,000-ha (247,000-acre) units. The survey was called "preliminary" because some of the data were incomplete or inconsistent, but the study nonetheless produced interesting findings: approximately 52% of the Earth's surface was undisturbed, 24% was partially disturbed, and 24% was human dominated. Removing "rock, ice, and barren land," the study found

that 27% was undisturbed, 37% partially disturbed, and 36% human dominated.

CI's assessment of the planet's remaining wilderness is summarized in its recent book *Wilderness: Earth's Last Wild Places* (Mittermeier et al. 2002). Three criteria were used to determine what areas qualified. The first was size—a threshold was set at 1 million ha (2.47 million acres). The second criterion was intactness—the area had to have 70% of its habitat intact and had to maintain "intact faunal assemblages" of mammals and birds, and in particular large predators. Finally, the study used a population criterion, applying a threshold of fewer than five people per sq. km. Based on these criteria, the study found that 46% of the planet qualified as remaining wilderness. Of the 37 areas studied, five were areas of high biodiversity and 11, called "mega-wilderness areas," were greater than 100 million ha (247 million acres).

The Wildlife Conservation Society's (WCS) study titled "The Human Footprint and the Last of the Wild" focused on four factors reflecting human influence on natural environments (Sanderson et al. 2002). The four criteria were population density, land transformation, human access (via roads or natural access points), and electrical power infrastructure (i.e., light visible by satellite). Scores were assigned for each factor and combined to generate a Human Influence Index rating. The results were then mapped. To determine what areas remained truly wild, the study then selected the areas in the top 10% in terms of wilderness in each biome. The result, according to this WCS analysis, was that 17% of the Earth's land surface remains wild.

Although the WCS result indicated much less remaining wild area than

CI's, the discrepancy is partially explained by WCS's exclusion of Antarctica from its analysis. With virtually no infrastructure, a very small human population, and 10% of the Earth's land surface, if Antarctica were included it would presumably raise the percentage of remaining wilderness to or near 27%. Moreover, CI's survey also conducted a second analysis using a lower population criterion (less than one person per sq. km) and an area that might more closely resemble WCS's top 10% wild areas. The result for this lower population density analysis was that 38.5% of the Earth's land surface qualified as wild. Viewed in this light, the WCS and CI studies produced more similar results.

These four studies are not directly comparable because of their different methods and criteria as to what constitutes remaining wildness. For example, as the authors of the WCS study point out, their analysis does not in fact measure actual human impact, but rather "suggests areas of influence where humans have more or less responsibility for biological outcomes" (Sanderson et al. 2002, p. 898). CI produced estimates of ecological intactness. But collectively, the studies and their differences in methods will guide future efforts. Further, all four studies indicate that significant wilderness remains, more than one might expect; at the same time, however, little of what remains is very far removed from human influence.

The window of opportunity to protect wilderness will therefore close quickly. As conveyed in the CI report (Mittermeier et al. 2002, pp. 34–39), the importance of these last wild places requires that we think beyond the usual, intensively managed national park model and consider larger conservation areas while we still can.

How Much Are Wilderness Ecosystem Services Worth?

It is increasingly recognized that wilderness is valuable for the ecosystem services it provides (e.g., clean water and air, carbon sequestration, nutrient cycling, erosion control, flood control, etc.), and that these services have economic value that can be estimated. A seminal study by Costanza et al. (1997) published in *Nature* estimated the economic value of global ecosystem services by taking local assessments of ecosystem values and then extrapolating to a global scale. The result was an estimate ranging from \$16 to \$54 trillion (18 to 61 trillion in 2000 dollars), or an average of \$35 trillion (38 trillion in 2000 dollars).

As the Costanza's et al. study acknowledged, however, the assessment had built in several uncertainties. One was a lack of data for a number of biomes, including deserts, tundra, and croplands. Another was the uncer-

tainty inherent in attempting to extrapolate from local data to a global scale. A third issue was the fact that the methodologies used to determine the values of the various ecosystem services were all different. Finally, a fourth issue was that the study provided the gross value of ecosystem services—the economic benefits of conversion were not subtracted to provide an estimate of net economic benefits.

A more recent study published in *Science* (Balmford et al. 2002) titled "Economic Reasons for Conserving Wild Nature" and launched at the WSSD, sought to remedy these issues in the 1997 study. The new effort compared the benefits of protection versus the benefits of conversion as directly as possible, selecting for analysis five development projects where data were available both on the revenues generated by conversion as well as the value of the ecosystem goods and services provided by the intact habitat. The data included values for marketed and



Figure 3—Gabon has perhaps the largest population in the world of western lowland gorillas. Photo by Vance G. Martin.

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nonmarketed goods and services as well as local and global benefits. Furthermore, to ensure consistency, the study only compared data that were generated using the same methodologies for each particular good or service.


Across the five projects in four biomes that were evaluated, the study found that the total economic value of conversion was roughly half the total economic value of conservation. The study estimated that the cost of converting relatively intact habitats was approximately \$250 billion per year. Conversely, the study placed the cost of conservation (i.e., of establishing a comprehensive global terrestrial and marine protection system) at roughly \$45 billion a year, and estimated that a global protection system would provide services with a net value between \$4.4 and \$5.2 trillion a year. In other words, the study concluded that a global protected areas system would pay for itself 100 times over.

More research is needed to elaborate on these findings. As Balmford et al. (2002) indicated, they were only able to identify five case studies in four biomes where information was available on both conversion and ecosystem services values. On the other hand, the authors point out that their calculations would have to be off by a factor of 100 before the \$45-billion cost of a global protected areas

system became unjustifiable in strict economic terms, an unlikely event given their conservative approach. This study makes a very compelling case for conservation of intact habitats. Of course the social, cultural, and spiritual benefits of conserving remaining wilderness only adds to the economic benefits, and may be even more important in rallying support for particular areas.

Conclusion

We believe that the wilderness concept will continue to gain momentum in coming years and as a result, that opportunities for large-scale conservation will continue to grow simultaneously with the need to protect and sustain such areas. We are also mindful that wilderness areas will continue to be under tremendous pressure, and that wilderness conservation will only succeed if it is a part of large-scale “sustainable development” discussions and action. By collaborating with the World Conservation Union (IUCN) and the World Commission on Protected Areas on a new Wilderness Task Force, we are working to ensure that wilderness questions are firmly on the international agenda in September 2003 at the World Parks Congress in Durban, South Africa, and that these discussions continue at the 8th WWC (likely in 2005). Maintaining an international

wilderness dialogue through these venues, and continuing progress in field projects, research, and grassroots initiatives, will ensure that the many socioeconomic, spiritual, and scientific values of wilderness are sustained in both developed and developing countries. 

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