Perils and Promise of Privately Owned Protected Areas

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Governments have long been the principal force behind the establishment of protected areas worldwide. The quality of governmental protection, however, has often proven inadequate, with many parks existing only on paper (Van Schaik et al. 1997, IUCN 1999). Even if publicly owned parks were well protected, more than 93% of the Earth's land area and most of its biodiversity would still remain vulnerable (WRI et al. 1998). Given ongoing habitat destruction, especially in the tropics (World Bank 1998), it is imperative that the conservation community develop additional approaches for *in situ* biodiversity protection. Privately owned protected areas have emerged as one option. Private parks are proliferating throughout much of the world, yet little is known about them. Research has begun to address private parks, but only indirectly (Sayer 1991, Schelhas and Greenberg 1993). A few case studies highlighting various aspects of specific preserves have been completed (Horwich 1990, Alyward et al. 1996, Langholz et al. 2000a, Reid 2001), and three researchers have conducted international mail surveys revealing private parks' activities, problems, profitability, and other attributes (Alderman 1994, Langholz 1996, Mesquita 1999). Additional studies have verified the private sector's increasing role in biodiversity conservation (Edwards 1995, Merrifield 1996, Krug 2001). In effect, what Dixon and Sherman (1990) called a "small but important development in protected area management" a decade ago has evolved into a pronounced new direction in conservation.

Despite their recent proliferation, and studies of them, private parks remain largely a mystery. Even experienced conservationists are hard pressed to name more than a few of the world's privately owned parks, let alone place them in a larger conservation context. As public resources for conservation dwindle and interest in private sector initiatives grows, it is increasingly vital that a systematic examination of this conservation approach be undertaken.

THIS ARTICLE REVIEWS THE CURRENT STATE OF KNOWLEDGE REGARDING PRIVATELY OWNED PARKS WORLDWIDE, EMPHASIZING THEIR CURRENT STATUS, VARIOUS TYPES, AND PRINCIPAL STRENGTHS AND WEAKNESSES

The rise of modern private parks

Privately owned protected areas have existed in various forms for centuries (Runte 1979, Alderman 1994). The first scholarly reference to them occurred approximately 40 years ago, when the First World Congress on National Parks acknowledged that many nature reserves throughout the world are "owned by private individuals, but are nevertheless dedicated in perpetuity to the conservation of wildlife and of natural resources" (Adams 1962). Since then, the private park niche has expanded rapidly. This growth remains largely undocumented, with virtually no information available on the

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location and number of privately owned parks. The World Conservation Monitoring Centre is the global organization responsible for tracking protected natural areas, but it has lacked sufficient resources to catalog private parks. The most recent United Nations list of the world's protected areas excluded privately owned parks. It did, however, briefly acknowledge that they are important for their high-quality management and protection and that they may become increasingly valuable in tropical countries, where state resources are very limited (IUCN 1994).

Anecdotal evidence suggests that private parks number in the thousands and that their numbers are growing rapidly. Preliminary data suggest that the amount of land they protect could be substantial. Alderman (1994), for example, estimated that the 63 Latin American and sub-Saharan private reserves in her study were protecting approximately 1 million hectares. Langholz (1999) estimated that private reserves in Costa Rica covered 63,832 hectares, an area equivalent to 1.2% of the national territory or 4.5 Costa Rican national parks of median size (median = 14,258 ha). Calculating the total number of private parks worldwide would require a common definition that currently does not exist. For the purposes of this article, we consider private parks to be any lands of more than 20 hectares that are intentionally maintained in a mostly natural state and are privately owned. Like publicly protected areas, these lands vary dramatically in size and uses and go by myriad labels ranging from preserves and reserves to parks and protected areas.

Private parks continue to thrive and proliferate both in the developing world and in industrialized countries. In Africa, for example, a large nature tourism potential and long history of game ranches have provided fertile ground for private reserves. Private parks are also expanding in Latin America. Colombia, in particular, has a well-organized network of more than 100 private reserve owners, which, according to the Worldwide Fund for Nature, provides an alternative to the government's insufficient management of natural areas, and directly involves citizens as stewards of their country's own natural resources (WFN 1997). Brazil has more than 100 private reserves, as well as a government incentive program to support them. Chile has a policy to promote private parks and is home to 270,000-hectare Pumalin, which is the world's largest private park (Bowermaster 1995, Rodriguez and Garcia 1995). Private reserves even appeared on the agenda at a recent international conference on Latin American protected areas; they were also the topic of special conferences in 1999 and 2001 devoted exclusively to their rapidly expanding role in Latin America.

Among industrialized countries, the United Kingdom has a long history of conservation on private lands. Examples include the National Trust and the Royal Society for the Protection of Birds, both of which have extensive networks of small protected areas (Alexander 1995, Hawes 1995). Australia has a growing private reserve niche, filled by organizations such as the Australian Bush Heritage Fund and the Australian Koala Fund (Templeton 1993, Bennett 1995). In the United States, The Nature Conservancy has a system of more than 1300 reserves protecting well over half a million hectares. Safeguarding 1725 rare species and communities, the parks range in size from 1.3 to 130,000 hectares and make up the largest private nature reserve system in the world (Murray 1995). Most preserves owned by The Nature Conservancy are located within the United States, although the organization actively promotes conservation worldwide. Nonprofit land trusts also protect vast amounts of land, often through conservation easements if not by outright purchase (Dwyer 1996). In the western United States hunting reserves thrive, a tradition that is currently diversifying to include reserves devoted to wildlife viewing (Edwards 1995).

Whereas documentation of the private nature reserve niche has been lacking, an assessment of the motivating forces behind it has been altogether nonexistent. In the absence of such research, we suggest three closely related factors that are most likely driving the private reserve boom. The first factor—government failure—stems from the public sector's unwillingness or inability to meet society's demand for nature conservation. Government parks have proven inadequate in terms of quantity and quality of protection, especially in the tropics. Worse, many developing countries are deeply in debt and are decreasing rather than increasing funding for parks. The second factor—rising societal interest in biodiversity conservation—peaked in Brazil with the 1992 Convention on Biological Diversity (Swanson 1997). Supplementing this international treaty is extensive documentation of biodiversity's ecological, genetic, social, economic, scientific, educational, cultural, recreational, aesthetic, and other values to humanity (Wilson 1992, Heywood and Watson 1995, Kellert 1996). The ongoing explosion in ecotourism is another reason for private park proliferation. Ecotourism has emerged as the fastest growing segment of the overall tourism sector, which is generally considered the world's largest industry (Weaver 2001). Various authors have discussed ecotourism's uneasy alliance with biodiversity conservation (Boo 1990, Whelan 1991, Wells 1997), including its role as impetus for private conservation efforts (Brandon 1996).

The diversification of private parks

No single model exists for privately owned protected areas. These lands vary dramatically, filling a wide variety of conservation niches. Table 1 contains a suggested classification system for private parks, based loosely on the World Conservation Union's (IUCN) existing typology for publicly owned protected areas (IUCN 1994). The categories illustrate the immense diversity among private reserves, providing scientists and policymakers a clearer picture of the private conservation sector. This improved understanding can lead to more carefully tailored incentive packages that enhance conservation efforts.

Clearly, a broad range of private reserve types exists, representing numerous ownership structures and management objectives. Although the categories are not mutually exclusive,

the typology provides a general framework for understanding private park diversity and equips policymakers with information needed to better employ the private conservation sector. Although the typology seems exhaustive today, additional categories may emerge as private parks continue their evolution.

Strengths and weaknesses of the private park model

Like all conservation approaches, private parks offer advantages and disadvantages. The broad diversity described above makes generalizations about them problematic. Nevertheless, the private conservation sector has reached a stage of maturity where general patterns are emerging. This section explores generally applicable strengths and weaknesses that apply across most manifestations of the private park model. It is intended to cast light on overall potential and pitfalls of this little understood conservation approach.

Ecological considerations. Private reserves fulfill many of the same functions as public parks, including ecological services (such as climate regulation, water production, purification of air and water) and social ones (such as recreation, spiritual, and bioprospecting use). A key strength of private reserves is their protection of biodiversity. Many reserves protect rare or threatened species (Alderman 1994). Others protect habitats underrepresented in a country's public park system or lands under heavy development pressure. Reserves often exist as biological islands protecting the last remnants of rapidly disappearing habitat. Finally, private ownership frequently is a precursor to public protection. Private parks can serve as temporary bulwarks for threatened lands, protecting them until governments become willing or able to assume responsibility for protection. A private land conservancy, for example, protected a rare and large tract of valuable habitat in the central United States as a private preserve until the Tallgrass Prairie National Preserve Act of 1994 made it a formal public park.

A principal disadvantage of private reserves from an ecological standpoint is their potentially tenuous status. Unlike government-authorized and permanently supported public parks, most private reserves are informally protected. Compounding this problem is their typically small size. Although some reserves are quite large—examples include 80,000-hectare Hato Pinero in Venezuela, 270,000-hectare Pumalin in Chile, and several reserves of over 100,000 hectares in Brazil—most lack sufficient area to protect megafauna or to avoid the adverse effects of fragmentation. One study showed that 30% of private reserves in Latin America covered fewer than 200 hectares (Alderman 1994). Another (Langholz 1996) showed that 75% of private reserves in Latin America protected fewer than 2500 hectares each. Both studies concluded that African reserves were much larger than their Latin American counterparts, with one estimating the average size of African reserves to be 11,436 hectares (Langholz 1996). Despite their larger size, even African reserves are small compared with public parks and the spatial needs of large species. Unable to support megafauna, private parks also surely suffer the fragmentation effects typical of biological islands, such as increased edge effects, introduction of exotic species, and contamination (Bierregaard et al. 1992, Noss 1997).

The fact that many private reserves are adjacent to larger public parks mitigates somewhat the effects of their small size. Nearly half (46%) of the Latin American and African reserves in Alderman's (1994) study of private reserves bordered a national park or other government area. La Planada in Colombia, for example, consists of only 1200 hectares but is located directly adjacent to a 2000-hectare government forestry reserve and is contiguous to a 100,000-hectare forested area proposed as a United Nations biosphere reserve (Glick and Orejuela 1991). Also, several reserves' primary ecological function is to provide a home for migratory birds, whose habitat requirements are temporary and small. An example is 390-hectare La Ensenada Wildlife Refuge in Costa Rica, which is transitory home to an endangered migrant known as the Jabiru stork (*Jabiru mycteria*).

Economic considerations. The most appealing economic attribute of private reserves is their potential profitability. Especially when engaged in ecotourism, reserves represent a livelihood strategy capable of both economic and ecological viability. Estimates of profitability among ecotourism reserves (type III) in Latin America and sub-Saharan Africa range from 59% (Alderman 1994) to 80% (Langholz 1996). In each case, a profitable reserve was defined as one for which total revenues exceeded total expenses in the year immediately preceding the study.

Economic benefits accrue not just to landowners but also to governments in the form of costs avoided. Privately owned parks represent free augmentation of public protected area systems—lands that governments might otherwise need to purchase and protect. The total economic benefit accruing from private reserves to governments and to society has yet to be calculated, but the sum could be immense.

Private reserves' frequent dependence on ecotourism poses an economic risk. Although tourism has skyrocketed during the last two decades, it is an industry vulnerable to wide fluctuations. Peruvian reserves, for example, suffered a 75% countrywide drop in tourism between 1988 and 1992, when mounting terrorism kept visitors away (Yu et al. 1997). Despite such fluctuations, many reserves throughout the world remain completely dependent on ecotourism revenues for their survival, and evidence suggests that this dependence may be rising (Langholz 1996). Terrorism, political unrest, natural disasters, and other factors can contribute to fluctuations in the tourism market that expose private reserves' tenuous security and underscore limits to the private sector approach.

A more insidious shortcoming is the potential conflict of interest between ecology and economics. Those reserve owners dependent on tourism may be tempted to degrade resources rather than conserve them, placing profit over protection. This conflict of interest takes many forms, one of

Table 1. Types of privately owned protected areas worldwide.

Category (type)	Management objective	Example
Formal park (Type I)	Protect nature, as a formally recognized unit in a national protected area system. Must be legally gazetted through legislation or executive decree. Includes monitoring and evaluation by government.	More than two dozen "Private Wildlife Refuges" have qualified to be legally recognized units in Costa Rica's protected area system (Langholz et al. 2000b).
Program participant (Type II)	Participant in a formal, voluntary incentive program designed to promote biodiversity conservation on private lands. Programs and are not as formal as Type I. Includes easements and payments for environmental services.	The Natural Heritage Program in the Republic of South Africa has registered more than 150 sites, protecting 216,332 hectares. Majority of these natural areas owned by private individuals (Cohen 1995).
Ecotourism reserve (Type III)	Combine nature conservation with tourism. Tourism is a principal revenue generator and takes place on part or all of the landholdings.	Tambopata Jungle Lodge (Peru) sits within the 6,000-square kilometer Tambopata–Candamo Reserve Zone and has capacity to host 6,000 tourists per year.
Biological station (Type IV)	Combine nature conservation with scientific research. Reserve serves as outdoor laboratory. May incorporate scientific and other forms of tourism, as well as education. Differ from NGO reserves (Type VIII) in that their primary mission is research.	The Jatun Sacha Biological Station protects 2000 hectares of forest in Ecuador's Napo Province, while supporting rain forest research, university field courses, and natural history tours.
Hybrid reserve (Type V)	Protect nature as one component of a diverse land-use strategy. Usually large ranches that combine agriculture, forestry, or cattle production, with reserve providing watershed protection and other amenities.	The 80,000-hectare Hato Pinero is a family-based operation in Venezuela that combines biodiversity conservation, nature tourism, and cattle ranching.
Farmer-owned forest patch (Type VI)	Safeguard water sources and other locally accruing environmental services, at the individual or family level. Usually informal, small (< 20 hectares), and not involved in tourism industry. Represent the least formal type of private conservation area.	Largest category of reserves in terms of amount of land protected and number of owners. Also the category about which the least is known, making it a crucial area for future research. Thousands, perhaps millions, of these patches exist worldwide.
Personal retreat reserve (Type VII)	Maintain a natural area as a personal haven, at the individual or family level. Frequently owned by urbanites who purchase or inherit land in a rural area, and who are not reliant on the reserve for income generation.	Sixty percent of the Adirondack State Park in New York consists of private property, much of it owned by urbanites who use the area for second homes and summer retreats.
Nongovernmental organization reserve (Type VIII)	Protect nature under the auspices of a local, national, or international nonprofit conservation organization. Base of support is broader than that of most other reserve types. Includes land trusts, foundations, and associations.	Schoolchildren around the world raised money to create The Children's Rainforest to protect threatened habitat in Costa Rica. With 22,000 hectares, the park is currently larger than 18 of Costa Rica's 22 national parks, and continues to grow.
Hunting reserve (Type IX)	Maintain natural area for purpose of sustainable wildlife utilization. Animals are collected for trophies or meat production, or both. Include game ranches and lands owned by hunting clubs. Especially common in Africa.	The Republic of South Africa currently has more than 9,000 game ranches protecting 8 million hectares. Habitat required for economically important umbrella species also supports nongame biodiversity.
Corporate reserve (Type X)	Protect nature as a tool for creating favorable publicity, as result of court order, or from a conservation ethic. Owned by private for-profit corporations (such as golf courses, paper companies, educational institutions). Often better managed than similar areas in government hands (Barborak 1995).	Developing country examples usually owned by large multinational corporations, including the forestry industry. Examples include Danum Valley (43,800 hectares) and Maliau Basin (39,000 hectares) in Sabah, East Malaysia (MacKinnon 1997).

which is keeping animals captive on the premises to encourage tourism. An ecotourism reserve situated high in Costa Rica's Talamanca Mountains, for example, keeps a wild caiman (*Caiman crocodilus*) on site, far from its native habitat. The owners caught the caiman on a river delta along the Pacific coast and now keep it in a pit as a tourist attraction at their mountain retreat. Related problems include excessive visitation by tourists at some reserves and inappropriate con-

struction of cabins, roads, and other infrastructure, which facilitates tourism but incurs ecological costs. Reserve owners can also piggyback on a country or region's good conservation reputation, letting their habitat deteriorate while protecting only the surprisingly small amount of land required to stage a nature walk (Yu et al. 1997). Clearly, ecotourism coupled with private conservation efforts is rife with conflicts of interest and would benefit from outside monitoring and evaluation. Governments should ensure that programs designed to support private parks include complementary efforts to ensure adequate oversight, not just for tourism impacts but for biodiversity protection in general.

Social and political issues. A strong and steady stream of writings has called for greater attention to social and political issues in protected areas establishment and operation worldwide (Machlis and Tichnell 1985, Wells and Brandon 1992, Schelhas forthcoming). The general idea behind such people-oriented perspectives is that since local residents affect (and are affected by) parks more than anyone else, they should have a major voice in resource use decisions (Western et al. 1994, Pimbert and Pretty 1995, Brechin et al. 2001). Privately owned parks overlap with two of these important social and political conservation themes—devolution of resource control and public participation in resource decisionmaking. In Colombia, for example, the private reserve surge is closely linked to empowerment, representing a step toward devolution of resource control to rural peoples. Private reserves can also represent an extreme form of participation in protected area management. Local residents who own reserves control decisionmaking instead of merely seeking to participate in it (Zube and Busch 1990, Borrini-Feyerabend 1996).

A major social and political pitfall of private parks is that they can become islands of the elite, places where wealthy landowners host affluent tourists. It is crucial that reserves develop meaningful links to surrounding communities through building schools, constructing roads, providing employment, promoting environmental awareness, and other activities described by Alderman (1994) and Langholz (1996). A second problem lies with private parks' contribution to the concentration of land ownership by the wealthy. Consolidation of large amounts of acreage into relatively few hands, and concomitant lack of access to the land by the rural poor, persist as intractable social problems across much of the developing world. Incentive programs that support private reserves can unwittingly help large landowners maintain their vast holdings, which serve as a haven for the rich. Brinkate (1996), for example, documented a case in which wealthy landowners in the Republic of South Africa declared their lands to be conservation areas in order to avoid government land redistribution schemes. A similar scenario may be playing out in Zimbabwe and other countries where large private holdings and conservation incentive programs exist. In such cases, private reserves can become flashpoints where the broadly supported goals of social justice and biodiversity conservation are at odds.

A final social and political issue lies with foreign ownership of private reserves. Alderman (1994) found 33% of reserves in Africa to be exclusively foreign-owned, with an additional 7% jointly owned by nationals and foreigners. She also found 23% of private reserves in Latin America to be completely owned by foreigners and another 25% owned by partnerships involving foreigners. Percentages in Costa Rica mirror those for Latin America overall (Langholz 1996). Although nationals own the majority of private reserves in developing countries, a large foreign presence can be disturbing to those who consider it an externally based land grab or subtle form of neocolonialism.

The road ahead

Private reserves are no panacea for the world's biodiversity conservation woes. The total amount of land they currently protect is unknown, but it certainly represents less than 1% of the Earth's land area, with undetermined potential for expansion. As is the case with community-based natural resource management, integrated conservation and development projects, and other recent conservation themes, private protected areas represent but one option in the conservation toolbox. Like all tools, they are best used in situations that maximize their particular strengths while minimizing their weaknesses.

Privately owned parks will not and should not replace government parks. Likewise, governments should resist pressure to privatize existing public protected areas. Biodiversity benefits from having a core constituency within the government, a public agency capable of battling against competing ministries such as forestry, mining, fishing, agriculture, tourism, and other sectors that can disrupt park protection. Too much reliance on the private sector could erode crucial internal support provided by a fully staffed park agency. Similarly, excessive clamoring over private parks runs the risk of lowering political will to support publicly protected areas.

The private park niche continues to expand, regardless of what the conservation community thinks or does. The challenge for academia and practitioners is to engage this trend and help channel its growth in a way that safeguards both biological integrity and human dignity over the long term. Considering our limited knowledge of this conservation approach, scientists have a crucial role to play. For example, how many privately owned conservation areas exist? Where are they? Do those areas have high agricultural potential? To what extent are they biologically isolated? What is their contribution as stepping-stones for migratory species? Who owns privately owned conservation areas? What relationships exist among ownership, size, and location? What biological features are these reserves protecting, and how do they differ from those of publicly protected areas? How does the quality of protection compare to that for publicly owned parks? What are the owners' motivations? Which incentive programs work best? Under what conditions and in what settings are private parks most likely to develop? To what extent are they substitute or complementary goods for public parks?

Answers to these and other questions will enhance our understanding of this promising conservation tool. Finding them will require an interdisciplinary corps of scientists, especially ecologists, biologists, sociologists, anthropologists, and economists. Ongoing habitat destruction and reductions in state expenditures for parks make the evaluation of the private park phenomenon not only an enormous opportunity for the scientific community but also a momentous responsibility.

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