PRIVATE PROPERTY RIGHTS TO WILDLIFE:
The Southern African Experiment

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INTRODUCTION

Zimbabwe appeared to be on a strong path to economic recovery and the implementation of market reforms in the mid 1990s. However, since 1997, President Robert Mugabe has been involved in both orchestrating and sanctioning numerous actions destructive to the economy and to property rights. This has reached a crescendo in 2000, a year which has seen widespread violence, intolerance of opposition, and both legalized and illegal (but officially sanctioned) breaches of property rights, particularly those vested in white-owned farms. It is all part of the last-gasp effort of President Mugabe to remain in power despite economic mismanagement which has resulted in growing levels of unemployment and inflation and a declining standard of living for most Zimbabweans.

One of the victims of these efforts has been the sense of security in property rights. So-called "war veterans" invaded as many as 1500 white-owned commercial farms and demanded that they be given the land. The government encouraged this lawlessness, and police failed to protect landowners. The economy of Zimbabwe will pay a high price in the future for this failure to protect the rights of property owners, as investors will no doubt fear that the government may act to expropriate their returns and property.

It is thus ironic that one of the economic success stories in the past two decades in Zimbabwe has been the establishment of effective private-property rights to the benefit of wildlife management. As a result, wildlife populations on private lands have boomed. Despite recent lawless actions, the experiences of the past 25 years in Zimbabwe and other southern African nations in privatizing wildlife offer important policy lessons for the rest of the world. These lessons will be valid whatever happens in Zimbabwe in the next few years.

In most of the world, the ownership of wildlife lies in the hands of governments. State agencies typically closely regulate the use of wildlife, including the amount of hunting permitted and at what times and places it can occur. In the United States—supposedly a bastion of free-market economics—wildlife is legally the property of the state. Governments,

mostly at the state level, tightly control the actions of hunters on private and public land alike. US law, for example, has long prohibited the commercial sale of meat from wildlife.

However, in the southern region of Africa (consisting of the nations of Zimbabwe, South Africa, Namibia, and Botswana), an important experiment has been taking place over the past 40 years (G. Child 1995). To a considerable degree, these nations have legalized and privatized the use of wildlife, encouraging hunting, tourism, and the sale of meat, hides, and horns. Wildlife remains *res nullius* (without formal owner) or state-owned, but if certain conditions are met, southern African governments have delegated to the owners of private land the full rights to control the use of wildlife on their land. The private owners have the authority to determine the timing, place, and extent of hunting, viewing, or culling of wild game. Since the 1980s, under a variety of community-based, natural-resource-management property-rights regimes, this innovative approach has also been adapted to the management of wildlife by people living on communal lands.

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Outside southern Africa, other African nations have adopted different strategies. Kenya, for example, banned most sport hunting of big-game wildlife in 1977. Since then, Kenya's elephant and other wildlife populations have suffered some of the most severe declines of any African nation. The contrast between the southern African strategy of privatization and the typical socialization of wildlife elsewhere in Africa presents a natural experiment of sorts with respect to the consequences of maintaining *de facto* private-property rights to wildlife.

In the United States, the regime of public ownership of wildlife is coming under increasing strain. More and more private owners are restricting access to their land—they may not own the wildlife, but they can still keep people from trespassing on their private property. Yet, without control over the disposition of the wildlife, they have little incentive to manage for improved wildlife habitat, adversely affecting the number of some desirable species. In other cases, limits on hunting and the general lack of management authority have permitted wildlife populations to grow rapidly to excessive levels. In some areas of the United States, deer and other game populations have proliferated, causing extensive damage to vegetation (including many private gardens) and property loss (including many collisions with automobiles).

Hunters generally have open access, free of charge, to national forests and other government-owned lands, which extend over more than 30 percent of the United States (although hunting is prohibited in national parks). Here the lack of pricing or other restrictions on access leads to congestion among hunters, and less desirable hunting conditions. Few trophy animals are available to hunt on publicly owned lands, because the larger animals

are successfully hunted long before they reach a trophy age and size. As these problems become more urgent on both private and public lands in the United States, the establishment of private-property rights to wildlife may become more attractive despite longstanding American legal traditions and attitudes to the contrary.

This paper examines the workings of the effective private ownership of wildlife in southern Africa. The paper does not review the efforts to create rights to the use of wildlife found on communal land.* The focus here is on farm and ranch land owned under fee-simple title. The focus is also on Zimbabwe, reflecting the central place of that country in these developments (and the long experience of one of the authors in the field of land and natural-resource management in Zimbabwe).

WILDLIFE AS PRIVATE PROPERTY

Prior to colonial times, population densities in Africa were low (Zimbabwe is about the size of California and had about 500,000 people in 1990) and hunting pressures did not represent a threat to the abundant populations of most wildlife. In some cases, African cultures held beliefs that served to protect wildlife. The Maasai in Kenya and Tanzania, for example, believed that wildlife belonged to God, and had stringent codes relating to any killing. In Zimbabwe, the crocodile clan in Matabeleland was forbidden from eating any animal that came from the water. Species such as the hyena aroused a superstitious fear of evil spirits that offered protection. The amaNdebele in Zimbabwe, among many tribes, considered elephant ivory property of the king which had to be taken to him (much reducing the incentive for ordinary people to hunt elephants). Similarly, the skins of any leopards killed were to be turned over to the king for use on ceremonial occasions (G. Child and Chitsike 1999), and the pangolin is still brought to the president as a tribute whenever it is found (although the government no longer encourages this).

The arrival of colonialism brought a whole new set of attitudes as well as the powers of modern technology (MacKenzie 1988). As happened to the passenger pigeon and bison in North America, many game populations were severely depleted by the wanton destruction of wildlife in the earliest days of the European presence. This led to restrictions, partly motivated by a desire to maintain adequate wildlife populations for sport hunting. Also mirroring the North American experience, beginning in 1928 colonial Rhodesia, the precursor to the modern state of Zimbabwe, created a large

* CAMPFIRE (Communal Areas Management Program for Indigenous Resources) was introduced in Zimbabwe in an attempt to involve subsistence farmers in efforts to maintain wildlife habitat and range, to offset the costs of wildlife deprivation, and to increase incomes to rural people. Readers are referred to Martin 1986; Murphree 1990; Metcalfe 1994; Murombedzi 1994; and Bond 1999.

system of parks where wild animals were protected from hunting. However, hunting has rarely led in and of itself to the elimination of wildlife in Zimbabwe; rather, it is habitat loss that is the greatest threat to biodiversity and healthy wildlife populations (G. Child 1995).

The thrust of the colonial regime was the economic development of Rhodesia—if mainly for the benefit of whites. This was taken to mean the introduction of intensive crop agriculture in those areas with suitable soil types and rainfall, with cattle ranching in the more arid regions. The numbers of big-game wildlife were in fact greatly reduced or even eliminated in areas of large-scale commercial farming where tobacco and other crops were grown for the international market. In the cropping areas, only a few species remained as habitat was eroded by settlement. In the ranching areas, a systematic campaign was often waged to remove wildlife, which competed with cattle (Dasmann and Mossman 1960).

Prior to the mid-1960s, farmers were not allowed to hunt, cull, or sell venison, and relied heavily on the Department of National Parks and Wildlife Management to deal with problem-animal control. There was no incentive for farmers to encourage wildlife and even where farmers did not illegally exterminate them from their land, they did little to enhance the habitat and encourage wildlife survival. One estimate suggests that more than 680,000 game animals were deliberately killed between 1919 and 1960 as part of efforts to control the tsetse fly, for which wild animals were believed to be the main hosts (Murindagomo 1997).

Buffalo were systematically eliminated from ranching areas for fear they would spread hoof-and-mouth disease to cattle herds. The Department of Conservation and Extension in 1952 stated that "game and cattle do not go together, so the elimination or considerable reduction of the game, and in particular, buffalo, zebra, wildebeest and kudu must be considered good for ranching" (B. Child 1988, 168). Lions and other major predators also had to go. The prevailing attitude was summed up in the aphorism of the time that "one can not ranch in a zoo."

Yet much of Zimbabwe consists of semi-arid rangelands with little rainfall, where even cattle ranching has always been economically marginal. Large cattle herds have been built up on such land, but the industry for many years depended significantly on government subsidies—and reductions in these subsidies in recent decades has encouraged increased conversion from cattle back to wildlife. Excessive cattle-stocking levels that had been encouraged by government often resulted in the degradation of rangeland conditions, especially in the more arid regions. As these problems were increasingly recognized, and concerns grew among conservationists for the rapid loss of the spectacular wildlife populations of Zimbabwe, a proposed early solution was the conversion of rangelands to cropping of wild game for meat production. Some observers argued that wild animals were more

naturally adapted to Zimbabwean habitat conditions and that cropping of game would result in a higher volume of meat (and greater ranching profits) than cattle operations were showing (Dasmann and Mossman 1960).

In 1961, a key first step towards the privatization of Zimbabwean wildlife was taken when large-scale commercial farmers were allowed, under the provisions of the newly enacted Conservation Act, to obtain permits to harvest for meat the wildlife found on their property. As of 1964, there were at least 33 ranches harvesting 34 percent of their total permitted levels. The level of total meat production was estimated at 2350 tons per year (Bond 1999). However, the predictions that game harvesting would prove superior economically to cattle raising were generally not realized. From 1964 to 1968, commercial production of meat from wildlife fell from 1200 to 800 tons per year (B. Child 1988). It proved expensive to capture and kill widely dispersed wildlife populations. The marketing of game meat lacked established channels of distribution for potential customers who had little previous experience with buying such meat commercially. In addition, the stringent veterinary and health regulations and the subsidies provided to beef production and marketing discriminated against game meat (Muir 1989).

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Ranching of wildlife on private lands might have proven a dead end, but a more promising use of wildlife arose. For much of the twentieth century, safari hunting had been associated primarily with Kenya and other parts of east Africa. A safari industry began to grow rapidly in Zimbabwe in the 1960s. By 1974, before the war of independence (against the breakaway Rhodesian government of Ian Smith) heated up, one study found 17 ranchers owning 1.7 million hectares were active in wildlife ranching for safari hunting, and another 150 owning 1.4 million hectares were showing an interest (B. Child 1988).

With leadership provided by the Department of National Parks and Wildlife Management, detailed training programs and tight licensing requirements were adopted for hunting guides, and today the guides of Zimbabwe are often said to be the best-qualified in Africa. Safari hunting did not depend on large numbers of animals as much as the presence of trophy animals. It thus offered the possibility of large revenues with low demands on both the land and the wildlife—and less likelihood of "mining" semi-arid rangelands, as excessive cattle stocking often seemed to be doing. At the same time, the transfer of responsibility for wildlife on private land from the state to the landholder reduced the considerable demands of finances and personnel created by problem-animal control. It freed the Department of Natural Parks and Wildlife Management to concentrate on wildlife research and the development of the parks estate.

In 1975, the Parks and Wildlife Act delegated to large-scale commercial farmers the management control over safari hunting, harvesting, and other

wildlife activities on their lands. The farmers were designated by law as the "appropriate authority" for deciding the wildlife use of the land. Hence, the owner could now decide the time and place of hunting, the number of animals to be hunted, the age and sex of the animals, minimally acceptable trophy sizes, and other conditions of hunting. The owner of private ranch land might choose to run safari operations from his or her property, or might instead choose to lease the hunting rights to an independent safari operator. Graham Child, the principal author of the act and then-director of the Department of National Parks and Wildlife Management, stated its philosophy in 1975:

> For species other than those accorded special protection, the new Act adopts the philosophy that land holders are better placed than anyone else to conserve their wildlife and that by permitting them to use it profitably this conservation will be more fully justified to the benefit of both the resource, in the face of competing land use practices, and rural productivity. Landowners are given a very large measure of discretion in how their wildlife is used, subject to the controlling influence of the local community of which they are a part, or in some cases curbs imposed by Central Government, which retains the ultimate responsibility for the resource. In order to foster the profitability of such use, most Government license fees will be abolished in favor of a system whereby the landowner may raise charges for activities such as hunting or fishing which he permits on his land. (B. Child 1988, 179-180)

THE RISE OF WILDLIFE RANCHING

One estimate suggests over 680,000 game animals were deliberately killed between 1919 and 1960 as part of efforts to control the tsetse fly.

As Rhodesia became a full-fledged war zone in the late 1970s, big-game hunters proved more willing than most tourists to take the risk posed by armed conflict. But the rapid development of game ranching had to wait until after independence in 1980. Tourism in general then grew rapidly in Zimbabwe, as the new nation taking the place of colonial Rhodesia was named. Total visitation to the park system, for example, grew from 161,572 in 1980 to reach 719,347 in 1990, drawn in large part by the extraordinary wildlife found there (Heath 1992). Other than the Great Zimbabwe ruins and the world-famous Victoria Falls (one of the seven natural wonders of the world, shared with Zambia), Zimbabwe has no other powerful tourist attractions capable of pulling visitors from thousands of miles away in Europe, North America, and Oceania (Heath 1992). As the Zimbabwean government reported in 1998, "most tourist destinations [in Zimbabwe] are on land that is managed by the Department of National Parks and Wildlife Management" (Ministry of Mines, Environment and Tourism 1998, 78).

Brian Child recognized the growing importance of wildlife ranching on private lands in Zimbabwe and was the first to undertake a comprehensive

study of its development up to about 1986. Surveying the origins of game ranching in Zimbabwe, Child found that the cropping of meat from wild game had stagnated at modest levels by the early 1970s. However, it was also true that, as Child reported, "cattle ranching is faltering economically, and inducing costly ecological degradation" (1988, 167). According to one estimate, 40 percent of cattle-ranching operations in Zimbabwe's semi-arid rangelands were not viable (Bembridge and Steenkamp 1976). The overall situation was not promising:

> Conventional systems of rangeland utilization are neither sustainable nor conducive to development. They are already unable to maintain existing, and in many cases inadequate, levels of human welfare, despite subsidization by the environmental capital—present production is at the expense of future welfare. A self perpetuating, and potentially catastrophic, degradation process is rapidly emerging. In an attempt to maintain income levels, falling productivity, exacerbated by declining profitability, is countered by greater over exploitation. The costs of such degradation escalate as these land use systems founder, especially as the people dependent on them become poorer and less able to avoid this degradation-viability gap. (B. Child 1988, 28)

The solution, as it was now hoped, would be to arrest the cycle of environmental deterioration by the introduction of a more profitable form of private land use, specifically wildlife ranching with a safari and tourism orientation (Martin 1986). Some ranches might convert entirely to safari operations and other wildlife-related activities, others might jointly raise cattle and manage for wildlife. A major economic advantage of wildlife was that it offered a wider number of potentially valuable ranch outputs, some of them putting little pressure on the land and environment. In addition to game cropping for meat and safari operations, there might also be money to be made in photographic and adventure tourism, the sale of live wild animals, harvesting of hides, and running lodge operations and ranch properties based on wildlife attractions.

In some areas of Zimbabwe by the 1980s, commercial wildlife operations were demonstrating in practice that they could be more profitable than raising cattle. Ranchers located near the Matetsi Safari area in northwest Zimbabwe benefit from proximity to Victoria Falls and Hwange National Park, the region of the country experiencing the most rapid increases in tourism. The land in this area is also marginal for cattle raising, with many ranchers in the past experiencing financial losses. By contrast, most ranchers who converted to wildlife operations experienced significant financial gains. Child investigated the experiences of wildlife and cattle operations in this area, finding that by the early 1970s there had been a conversion of ranch operations to hunting concessions, and then again in the mid 1980s a "rapid swing" towards game ranching occurred.

On a prototypical ranch analyzed by Child, wildlife trophy fees would be expected to yield $40,000 per year, safari operating fees another $40,000, and the sale of game meat $5000. Child calculated that cattle ranching would lose money even on a variable-costs basis, yielding a "gross margin" (total revenues minus variable costs) of negative $1.18 per hectare, while wildlife would yield a positive gross margin of $8.95 per hectare.

A safari industry began to grow rapidly in Zimbabwe in the 1960s.

One ranch in the area, the Rosslyn ranch, had originally been managed for cattle beginning in 1948, but in the 1950s had lost money every year except two. With such poor results, a decision was made in 1967 to convert to wildlife ranching. Wildlife populations expanded in four years by as much as 50 percent. In terms of meat production alone, the land proved viable, producing 1.3 kilograms per hectare, compared with 0.8 kilograms per hectare for cattle. However, it was the growing revenues from safari operations that gave the greatest boost to profitability. Thus, a losing cattle ranch was converted to a wildlife operation that made money for all six years of its operation. (After 1972, the ranch area was taken over by the Rhodesian government for incorporation within the Matetsi Safari Area, where it is now regularly leased as state-owned land to safari operators) (B. Child 1988).

The northwest of Zimbabwe was not the only area where wildlife management was proving economically viable. In 1986, Child surveyed ranchers in the southeastern area (the "lowveld") of Zimbabwe, asking what was the most profitable use of their land. None said cattle ranching by itself. Thirty percent said "mostly cattle, some wildlife;" 40 percent said "mostly wildlife, some cattle;" and 30 percent said "wildlife only." Child summarized the overall conclusions of his 1980s research on wildlife ranching as follows: "economic indicators (profits, land use trends, ranchers' opinions) are unanimous in suggesting that wildlife has a comparative advantage over cattle production in semi-arid rangelands" (1988, 526). He found that "in all cases wildlife profits were twice as high as those from cattle relative to the limiting factor, and wildlife demonstrated an ability to perform four to five times as well as cattle." Reflecting such economics, by 1987 the number who were registered as wildlife producers equaled 10 percent of all private farm and ranchland owners (Muir 1989).

The private gains to ranchers from their wildlife operations were supplemented by significant social gains, including:

- reduction of the large government subsidies to the beef industry;
- attraction of greater tourism to Zimbabwe that could offer benefits well beyond immediate tour and safari operators and ranchers;
- reduced rangeland erosion and degradation with consequent improvement in the overall environmental quality of Zimbabwe;
- enhanced biodiversity.

PRIVATE WILDLIFE MANAGEMENT IN THE 1990s

Child's findings regarding the superior economics and environmental impacts of wildlife ranching relative to cattle raising were generally confirmed by further reports in the 1990s (Dean 1990; Muir 1993; Muir and Bojo 1994; Nuding 1996; Bond 1999). Jansen, Bond, and Child (1992) surveyed 89 cattle, wildlife, and combined operations located in the semi-arid rangeland of Zimbabwe. Thirty-nine percent of the cattle-only ranches were losing money, and the average rate of return for investment in these ranches was 1.8 percent. The addition of wildlife could raise the rate of return to 3.6 percent. The highest profitability was achieved by ranchers with wildlife only, a return of 10.5 percent—although there were wildlife ranches losing money, usually due to a lack of management skill. A further analysis estimated the social returns to Zimbabwe as opposed to the individual rancher returns, correcting for foreign exchange rates and other price distortions, external costs of environmental degradation, and other market imperfections. It reached much the same conclusions with respect to the greater desirability of wildlife ranching.

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Kreuter and Workman (1994) complemented the analyses of Jansen, *et al*., with an analysis of 15 large cattle-only operations, 7 wildlife, and 13 mixed ranches in the Midlands Province, where the climate is generally less arid (see also Kreuter and Workman 1992). For these ranches, those with wildlife only were less financially successful than those with cattle only. The mixed ranches, however, had the highest profitability. Considering also the advantages of risk diversification and reduced environmental pressures on the land, Kreuter and Workman concluded that "mixed ranching appeared to be financially, economically and ecologically optimal where wild animals were abundant" (1994, 268).

Reflecting the growing awareness among ranchers themselves of the advantages of wildlife, Hill reported in 1994 that along with growing horticultural and tobacco production, wildlife ranching was "one of the fastest growing new uses of commercial farming land in Zimbabwe." The Zimbabwe Commission of Inquiry into Appropriate Agricultural Land Tenure Systems (1994) found that 10 percent of the land under large-scale commercial farming was being put to wildlife use, reflecting the "higher returns from game in comparison to farming in this sector." In that year, at least 370 professional hunts were recorded on 53 properties.

In the arid rangelands of Natural Region IV (Zimbabwe is commonly divided into five broad ecological zones), 44 percent of the land was either in wildlife ranching alone or mixed wildlife-cattle (Commission of Inquiry). By 1995, 18 percent of all Zimbabwean farmers were registered as being in the wildlife business, at least in part if not exclusively. A 1995 survey of members of the Wildlife Producers Association, achieving 50 percent coverage, showed that their lands held 250,000 wild plains animals,

including 10,000 sable, 10,000 zebra, and more than 2,000 giraffe (Muir 1998). Taking account of increasing communal-land management for hunting and tourism purposes, the government of Zimbabwe reported in 1998 that "today about 30 percent of Zimbabwe is under some form of wildlife management and it is the fastest growing sector and a major foreign currency earner in the national economy" (Ministry of Mines, Environment and Tourism, 361).

As a result of the increasing amounts of land being dedicated to wildlife ranching, by the 1990s private land had begun to make a major contribution to the levels of species diversity in Zimbabwe. Commercial lands contained a majority of every plains game species except zebra (of which they held 46 percent). Ninety-four percent of the eland in Zimbabwe were on privately-owned commercial farm and ranch lands, 64 percent of the kudu, 63 percent of the giraffe, 56 percent of the cheetah, and 53 percent of both sable and impala (Hill 1994). Tsessebe were once threatened throughout Zimbabwe but were able to recover on the Debshan and other ranches, subsequently allowing their restoration to many other private and public lands in Zimbabwe (Zimbabwe Trust 1992).

In terms of the "big five," 32 percent of leopards in Zimbabwe were found on commercial lands (owing to their nocturnal habits and wariness of humans, leopards are still commonly found over much of Africa). In 1997, 77 percent of black rhino were found on commercial ranch land (unlike the resilience of leopards, rhino were virtually wiped out on two occasions—first by white hunters in the 1890s and then by poachers in the 1980s and early 1990s). The remaining rhino on private lands are mostly found on large conservancies that include assemblages of private land owners operating under collective-management agreements (du Toit 1998). However, because of the threat of cattle predation and the danger to humans, only 6 percent of lions were found on commercial lands.

In some areas of Zimbabwe by the 1980s, commercial wildlife operations were demonstrating in practice that they could be more profitable than raising cattle.

Because of concern about hoof-and-mouth disease, buffalo had been systematically eliminated from private lands in earlier years, and less than 1 percent of Zimbabwean buffalo remained on commercial land (Hill 1994). However, the numbers are once again building, and were up to 3 percent in 1995. Stocking buffalo on ranches outside the European Community beef areas has escalated rapidly in recent years, despite the legislation which strictly controls buffalo rearing on private land. Owing to the destructive impact of elephants on farm crops and ranching operations (the typical elephant consumes about 200 kilograms of vegetation per day), elephants had also been virtually eliminated from commercial ranching areas of Zimbabwe. Here again, private lands held less than 1 percent of the total Zimbabwean elephant population (Hill 1994). More recently, however, consistent with their efforts to re-establish the wildlife conditions of the past, the larger private conservancies have embarked on a program to reintroduce buffalo and elephants within their boundaries.

In terms of the total land area in Zimbabwe dedicated to wildlife purposes, the national park system has the largest share, 48 percent, followed by private commercial lands with 31 percent. However, the land set aside in Hwange, Mana Pools, and other places officially designated as national parks (the park system has various kinds of designations) are not available for hunting. The largest portion of safari land available to hunting (40 percent) is found on private commercial lands (Hill 1994).

Given the distribution of game animals in Zimbabwe, safari operators typically offer packages that include hunting for plains game (eland, impala, gazelle, etc.) on commercial land in combination with hunting of the dangerous big game (elephants, buffalo, lions, etc) on state-owned and communal lands. For such packages, big-game hunters (predominantly from North America) pay prices typically in the range of $500 to $1000 per day. A safari including the hunting of big game (along with various types of plains game) takes 14 to 21 days.

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All in all, except for the large and dangerous big game, the preservation of Zimbabwean wildlife by the early 1990s had become more of an affair of private management for financial gain than of government protection. It had resulted in both increased wildlife numbers and increased return to the land. Such a circumstance probably could not be found in any other place in the world outside the nations of southern Africa. In Zimbabwe, it was made possible by the property-right innovations of 1961 and 1975 that enabled private land owners effectively to take possession of wildlife as private property. As reported by Murphree (1995), in the 20 years since the 1975 law had been enacted in Zimbabwe, "a new and flourishing wildlife industry is in place, wildlife revenues have increased dramatically, wildlife populations have expanded and their habitat has improved." This contributed significantly to the international goals of promoting species diversity and sustainable development in Zimbabwe.

OTHER SOUTHERN AFRICAN NATIONS

As of 1990, South Africa consisted of 78 percent private farm and ranch land, Namibia of 45 percent private land and Zimbabwe of 35 percent; no other country in southern or eastern Africa had more than 10 percent of their land in private farm and ranch ownership (Cumming 1990). Like Zimbabwe, legislation has been enacted in Namibia and South Africa to allow private owners to manage wildlife on their land. The results in both these countries have shown a rapid growth of wildlife ranching, boosting wildlife populations and promoting biodiversity.

Namibia in 1967 was the first southern African nation to give people effective ownership of wildlife on their land (Joubert, Brand, and Visagie 1983). Indeed, the Namibian example helped to inspire the similar law enacted in Zimbabwe in 1975. (G. Child 1995). In South Africa, the legal

regime for wildlife is established at the provincial level but it is similar across the four provinces. A private land owner can apply to register as a wildlife operator as long as the ranch meets certain criteria for size and perimeter fencing. If the government grants approval, no permit is then required for hunting, which is under the full control of the land owner, including even the option of night hunting (Cumming 1990).

Although few current aggregate statistics exist for wildlife ranching in South Africa, Cumming estimated in 1990 that more than 19 percent of South African farmland, involving more than 160,000 square kilometers, was being put to use in one or another form of private wildlife use. This involved more than 8000 farms and ranches, about 17 percent of the more-profitable farming operations in South Africa. Farmers and ranchers earned on average 14 percent of their gross revenues from wildlife. Much as Kreuter and Workman found in the Zimbabwean Midlands, the most profitable use in typical land conditions for South Africa involved a mixture of cattle and wildlife.

By the 1990s private land had begun to make a major contribution to the levels of species diversity in Zimbabwe.

More recent estimates by Graham Child (1999) characterize the status of the South African wildlife industry in 1997, based on data from the Centre for Wildlife Economics at the University of Pochestroom. There are an estimated 6000 wildlife ranches with perimeter fencing enclosing about 10 million hectares in South Africa. About 5000 foreign hunters spent around $22 million in 1997—and there were still larger numbers of domestic South African hunters, who spent an even larger sum in total. The wildlife industry altogether yielded spending of $115 million that generated around 42,000 jobs in the South African economy (the jobs per unit of land in wildlife ranching in South Africa are greater than the number of jobs per land unit for cattle ranching in Zimbabwe).

The sale of live game for the purpose of restocking other ranch areas has become a significant part of the wildlife industry in South Africa. In 1997, wildlife ranchers earned $809,262 from sales of white rhino, $599,607 from disease-free buffalo, $388,153 from eland, and $364,754 from sable.

Almost half of Namibia consists of around 6000 large ranches with a history of cattle ranching since the early days of colonial settlement. Prior to the 1967 delegation of management control over wildlife to private land owners, “farmers viewed wildlife as competition for their livestock and therefore a cost rather than a benefit” (Jones 1999a, 10). Species such as the endemic Hartmann’s mountain zebra were declining and elephant, rhino, and lion had become virtually extinct on private freehold land. However, the establishment of *de facto* private rights to wildlife reversed this longstanding condition of declining Namibian wildlife populations, and has now resulted in an 80 percent increase in wildlife on freehold land and a major boost to the national economy (Jones 1999a). The new wildlife industry captures

significant revenues from consumptive uses of wildlife such as sport hunting, culling for meat, trophy hunting, and live sale, and from non-consumptive uses such as photographic tourism. On some ranches the operators have even begun to reintroduce elephant, rhino, and lion (Jones 1999a).

The Namibian experience thus closely parallels the positive wildlife developments on private land in Zimbabwe over the past several decades. Overall, Cumming comments with respect to the entire southern African region:

> There is within the region an enormous area presently available for wildlife production and utilization. Given this large area, the diversity of species and options for utilization, and increasing demands for both consumptive and non-consumptive tourism, there is a firm basis for an expanding wildlife industry. Despite the parlous state of the data base for most countries those data that are available indicate an expanding industry with increasing demand and commodity prices. This is in sharp contrast to the beef industry where commodity prices have been declining steadily over the last two decades. (1990, 16)

PRIVATE LAND CONSERVANCIES

Although the game-ranching industry has continued to expand during the 1990s, it faces several potential limitations on its future growth. Most individual ranches are too small to accommodate a full range of wildlife in a natural setting; animals are not free to roam over the long distances that characterized their historical patterns of behavior. On smaller ranches visitors may have the perception that they are entering into a game enclosure—or as it may easily seem, a large zoo rather than a true encounter with wild animals. In addition, the costs of building and maintaining internal perimeter fencing for many ranch properties will significantly exceed the costs of one fence around the exterior of all the ranch properties together. There are other kinds of economies of scale that make the economics of wildlife ranching more attractive over an area larger than the typical ranch.

The largest portion of safari land available to hunting (40 percent) is found on private commercial lands.

The institution of the private land conservancy has been pioneered in Namibia, South Africa, and then Zimbabwe as one solution to these problems (De Alessi 2000). At present there are 12 conservancies on freehold land in Namibia that cover an area of about 1.2 million hectares (Jones 1999a). In Zimbabwe there are an increasing number of conservancies covering more than 6000 square kilometers (the Savé conservancy alone is some 3400 square kilometers). In essence, a conservancy involves a group of land owners (thus far individual private owners in Zimbabwe, but the approach is being applied to communal areas in Namibia as well) who band together to manage their lands as a joint wildlife unit (Murphree and

Metcalfe 1997). They enter into agreements for common management of the wildlife, for sharing revenues derived from wildlife operations, for allocation of costs for joint wildlife projects, and for any other collective sharing of benefits and responsibilities. In Zimbabwe, the best-known conservancies are the Savé, Bubiana, and Chiredzi River, all located in the "lowveld" area of semi-arid rangelands of the southeast, bordering South Africa to the south and Mozambique to the east.

The Beit Trust and the World Wide Fund for Nature (WWF) played a crucial role in the creation of these Zimbabwean conservancies. As poachers were decimating rhino populations throughout Africa in the late 1980s and early 1990s, WWF was desperate to identify a few refuges where the last remaining black rhinos could be protected, hopefully laying the basis for a future recovery of the species. In a major, and at times controversial, shift of strategy within the conservation movement, WWF turned to the owners of private ranch land as a more promising venue for establishing effective black rhino protection. The governments of Zimbabwe and other African nations were finding it difficult to meet the transitional and managerial requirements—even in the most well protected areas of government-owned lands—necessary to fend off the international rings that engaged in the lucrative Asian trade in rhino horns.

All in all, except for the large and dangerous big game, the preservation of Zimbabwean wildlife by the early 1990s had become more of an affair of private management for financial gain than of government protection.

However, few ranches individually had the large area required to provide suitable habitat for black rhinos. It was thus necessary for WWF's Rhino Conservancy Project to find ranchers willing to join together in a collective-management endeavor—and this collective undertaking would likely extend beyond rhino management to other animals. In any event, the Project was able to identify groups of landowners in the areas covered by the three conservancies. Today, effective protection for some 165 black rhino is maintained in the Savé, Bubiana, and Chiredzi River conservancies. Private ranches are estimated to offer protection to 285 black and 66 white rhinos (WWF, personal communication).

The Savé conservancy involves the largest number of members (23) and the largest area (340,000 hectares), requiring a perimeter fence of more than 300 kilometers. The Savé conservancy also has the most complicated sharing agreements, and has gone the farthest in making wildlife their economic mainstay. Indeed, cattle have been removed altogether, thus making possible the reintroduction of buffalo and elephant. The decision to turn in the direction of wildlife reflected in part the conclusions of a Price Waterhouse (1994) study, summarized by Raoul du Toit (the principal WWF staffer then and now in the rhino conservation effort) as follows:

> From a financial perspective, wildlife operations would generate about US$8 per hectare in gross annual revenue, compared to less than half of this from cattle operations, and the wildlife revenue could increase fivefold as the area becomes an established tourist

destination. The return on capital employed would be 1-3% for cattle operations, compared to 10-22% for wildlife operations. Over half the wildlife revenues would be in the form of foreign currency, whereas veterinary constrains on the export of Lowveld beef would not allow for the direct generation of foreign currency from cattle operations.

From a socio-economic perspective, wildlife operations (based on low-volume tourism) would double employment in the short-term, quadruple employment in the long-term, and generate higher average wages than the cattle industry. With wildlife, local economic linkages (with impoverished Communal Land communities) could be strongly developed whereas cattle operations mitigate against such linkages. (1998, 6)

Rates of growth of the black rhino population in the large area enclosed within the boundaries of the Savé conservancy have been double those achieved in smaller rhino enclosures in other parts of Africa. No rhinos have been lost to poaching. Following the introduction of 300 buffalo in 1995, the buffalo population has grown at a rate of about 10 percent per year. More than 500 elephants were purchased in 1992-1993 from nearby lands of drought-stricken Gonarezhou National Park, and this population has grown rapidly as well. With leopards common as they are throughout much of southern and eastern Africa, only lions are missing among the "big five"—and they may be introduced in the future. A substantial wild dog population (70 animals) is found in the Savé conservancy, of special biodiversity note because the wild dog is an indigenous African species almost as endangered as the black rhino in terms of total numbers continent-wide, estimated to be only a few thousand (du Toit 1998).

The most profitable use in typical land conditions for South Africa involved a mixture of cattle and wildlife.

The Malilangwe Trust is also located in the southwestern lowveld in proximity to the Savé conservancy and Gonarezhou National Park. The Trust is similar to the Savé conservancy in many of its land characteristics, goals, and methods of operation, but differs in that the entire area of the Trust is consolidated under one ownership. Large financial contributions by a wealthy American benefactor have made the acquisition of a land area of such large size possible. In 1998, the Trust spent about $1 million to purchase 28 black rhinos from the KwaZulu-Natal Nature Conservation Service in South Africa. Another $300,000 was spent to import 33 roan antelope and 20 Lichtenstein's hartebeest—animals once common in Zimbabwe but now very rare. All this was part of implementing the core vision of the Trust that the "habitats and wildlife populations...have been restored and are maintained in their former pristine state" (Malilangwe Trust 1998). While this goal is yet to be fulfilled, all of the big five are present and commonly seen by visitors, including, besides the rhino, 145 elephants, 413 buffalo, 45 leopards, and 25 lions (Malilangwe Trust 1998).

The sale of live game for the purpose of restocking other ranch areas has become a significant part of the wildlife industry in South Africa.

The Malilangwe Trust operates two high-end luxury lodges and a safari operation (catering mostly to bow hunters) that in 1998 yielded successful hunts of 7 buffalo, 2 crocodile, 12 zebra, and 9 kudu, among other species. Although still a long way from being realized, the goal is that the Trust lands will become self-financing. Whether through the continuing contributions of international benefactors or as a self-financed operation at some point in the future, an outstanding area of biodiversity preservation and restoration of original African wildlife is in the process of being created. A necessary precondition for all this is a regime of effective private-property ownership of wildlife such as has existed in Zimbabwe since 1975, making it feasible for the Trust to invest large sums of money in restocking endangered African fauna in areas from which they had long ago disappeared.

The process of creating a conservancy is likely to involve difficult negotiations and other transaction costs (Jones 1999b). The leading examples of Zimbabwean conservancies owe their existence in large part to the entrepreneurial efforts of non-governmental organizations (NGO) seeking to find a home for endangered black rhino populations. If the institution of the conservancy is to spread more widely in Zimbabwe, it may also need outside facilitation in more normal circumstances. An NGO might consider funding a technical advisory and facilitation service for the formation of new wildlife conservancies. Government might consider changes in the law that would more clearly define the legal status and otherwise encourage the formation of new conservancies, thus allowing for wider collective ownership and management of wildlife over the large areas of land needed by many species.

BENEFITS TO THE NATION?

The evidence seems overwhelming that the existence of effective private-property rights to wildlife is advancing the goal of the conservation of that wildlife and the maintenance of biodiversity in Zimbabwe and other southern African nations. This is the principal objective of many of the wildlife NGOs operating in Zimbabwe, and a principal concern of the international community and their governments more generally. Preservation of the unique wildlife populations of Africa, in short, arouses the strong interests of people all over the world.

However, the nation of Zimbabwe has other important concerns as well (Vudzijena 1998). In any democratic society, the welfare of its citizens will ultimately come first. An estimated 76 percent of the Zimbabwean population at present lives below even the minimum standards used to define poverty. Most wage earners are paid less than $100 per month, barely adequate for the survival of a family.

The picture is further complicated by the distribution of the ownership of land in Zimbabwe. About 4500 mostly white owners of private land

occupy about 35 percent of the area in a nation of 12 million people, including most of the best farmland. These lands were in essence confiscated from the native black populations during the Rhodesian settlement period (in much the same way that the native people lost their land in North America). In the semi-arid rangeland areas of Zimbabwe, the same lands are now often the ones being converted to private wildlife use. In Namibia, a similar circumstance holds: about 6000 largely white owners occupy about 40 percent of the land, including many of the areas where wildlife ranching holds the greatest promise.

An inevitable question thus is raised: Does the private wildlife industry largely benefit initially a group of wealthy white land owners, and internationally the wealthy (certainly relative to Zimbabwean standards) community of Europeans and North Americans who have a great interest in wildlife conservation in Africa? This question is caught up in the policy debate relating to the land-redistribution program of Zimbabwe—admittedly a program where there have been many more promises than results. It might be rephrased as follows: If Zimbabwe does at some point embark on a serious program of land redistribution, should private lands being devoted to wildlife management be specifically targeted for redistribution purposes as appears to be the case in the land rhetoric? Strictly in economic terms, such a policy would not be justified if the net social benefits of wildlife are positive; moreover, it seems illogical to promote tobacco, flower exports, and other horticulture (as at present) but to discourage wildlife ranching. Wildlife as a land use can be equally or more advantageous than conventional cattle ranching in arid areas in terms of foreign exchange, domestic employment, the environment, and in retaining future options. In addition, it provides significant positive externalities to the international community.

Nevertheless, at present the government of Zimbabwe seems to accord a low priority to private wildlife conservation. Some would say the government is antagonistic. It is partly a "legacy of hostility toward wildlife resulting from the biased legislation of the colonial period." It is within living memory that many people were "severely damaged by wildlife…Even today, the maintenance of eco-systems and wildlife involves them (the people on the land) in large social and economic costs" (Zimbabwe Trust 1992, 1, 8).

Recently, the Department of National Parks and Wildlife Management imposed a new regulation (Statutory Instrument 26 of 1998) requiring that private land owners should submit proposals for individual safari operations on their land (including planned hunts and numbers of animals) and that the operator must have government approval before the safari can proceed. Such a policy would effectively reverse the privatization of wildlife in the 1975 Parks and Wildlife Act. It would amount to the resocialization of wildlife ownership in Zimbabwe—perhaps an easy step in a nation founded

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on socialist economic principles and with the United States and other "advanced" countries all having their own forms of state ownership of wildlife. Up to the present, however, the Zimbabwean government has not enforced the new regulations, leaving this in limbo. As du Toit commented recently with respect to the Savé conservancy, it is with respect to "socio-political issues" and establishing a sound working relationship with the people living in neighboring communal lands that the rancher members of the conservancy currently face their "greatest challenges" (du Toit 1998).

The current negative attitude of the Zimbabwean government with respect to private wildlife (in part a matter of continuing adherence to cultural traditions of cattle raising extending back over 1000 years or more) is matched by at least an equally great, and in some ways contradictory, enthusiasm to boost tourism. Tourism is the most rapidly growing sector of the Zimbabwean economy and a main earner of foreign exchange. In terms of the economics of international trade, one of Zimbabwe's greatest "comparative advantages" is the spectacular wildlife population it possesses. Total tourism revenues in 1998 amounted to about 7 percent of Zimbabwe's Gross National Product; and direct employment in the tourism sector was around 80,000 jobs (8 percent of total employment). The indirect employment and high multiplier effects add considerably to the role of wildlife in Zimbabwe's economic growth.

The evidence seems overwhelming that the existence of effective private-property rights to wildlife is advancing the goal of the conservation of that wildlife and the maintenance of biodiversity in Zimbabwe and other southern African nations.

If long-distance air fares could be reduced (a real possibility in a newly deregulated international-airline arena), airline service improved, and the personal security of foreign tourists assured, Zimbabwe thus far may have only touched the tip of the iceberg of international tourism. Zimbabwe might want to follow the example of South Africa, where "all concerned are hoping tourism will become the new engine of South Africa's economic and employment growth." In South Africa, "broader business interests—mining houses, insurance companies and the like...want to see more people employed in SA and believe tourism is best able to do it" (*Financial Mail* 1999, 42-43).

In Zimbabwe, given that the national-park estate is unlikely to expand further, any increases in the total amount of land devoted to wildlife tourism (the main source of Zimbabwean tourism) are likely to occur in the private-ranching and communal-lands sectors. The wildlife activities in communal areas are, in fact, complementary to those of the ranching sector—with big game such as elephant and buffalo likely hunted on the communal lands and plains game on the freehold ranches. The urgency of increased tourism revenues is all the greater at the current time of high inflation and generally poor economic performance in Zimbabwe, caused in large part by the inability of the nation to earn sufficient foreign exchange through exports to cover its import demands. Significant areas of additional private lands will be converted to wildlife as a simple matter of the current

economics of ranching, unless government intervenes to restrict land size or acquire the lands for redistribution and rural resettlement.

The price of policies discouraging the growth of the wildlife industry might be large, not only in terms of lost wildlife tourism but also in the opportunities to increase incomes in rural areas and to find sustainable and economic use of poor land in semi-arid areas. More analysis is required to consider the effects of different options in promoting viable patterns of economic growth that can also be equitable. Zimbabwe urgently needs strategies capable of both boosting foreign-currency earnings and increasing the incomes of the rural poor.

The existence of a large national-park system poses similar political/economic issues as the private-wildlife estate. One observer finds that "under present circumstances much of the Zimbabwean electorate would probably welcome the elimination of protected wildlife areas and most large mammals" (Zimbabwe Trust 1992, 8). Since the parks are seldom visited by the average Zimbabweans, the strongest justification for their existence—other than the bureaucratic imperative that a parks department already exists with many civil servants who are Zimbabwean—lies in the foreign-tourism revenues that they generate directly and indirectly (as well as the wildlife-conservation motives that many native Zimbabweans share with the international community). Jansen (1994) undertook an analysis of the financial inflows to Zimbabwe resulting from increased tourism, using visitors to Hwange and Mana Pools National Parks as illustrative case studies. Some portion of tourist expenditures made in Zimbabwe "leaks" out of the country in the form of purchases that require foreign exchange. Jansen estimated this leakage in the tourism sector at 25 percent. The remaining 75 percent of foreign-tourist expenditures represented net inflow of foreign exchange to pay for local wages, purchases of food and other safari supplies, lodging costs, souvenirs, etc.

Graham Child (1999), drawing on comparisons with South Africa (where the wildlife-ranching database is better and more up-to-date), recently estimated that wildlife ranching was generating about US$25 million in gross revenue per year in Zimbabwe. Based on Jansen's estimates, the private-wildlife industry in Zimbabwe would be responsible for inflows of around US$19 million of foreign exchange each year (about Z$700 million). Because of concerns for hoof-and-mouth and other diseases, beef can only be exported from limited parts of Zimbabwe. As a result, over much of the country the foreign exchange inflows coming from wildlife ranching can be expected to substantially exceed those from cattle raising.

Wetenhall in a 1991 analysis for the Department of National Parks and Wildlife Management concluded that the promotion of tourism—especially high-end tourism with low volumes and high charges to visitors—offered major economic gains for Zimbabwe. As he stated:

> For Zimbabwe the benefits of tourism almost certainly outweigh the costs. Net forex receipts are relatively high, jobs are created for a fast growing population and use of wildlife as a natural resource is generally thought to be beneficial to the economy. At the same time the social and ecological cost of controlled amounts of high end tourism is relatively limited. Therefore further growth of the tourist industry is likely to be advantageous to Zimbabwe. (Wetenhall 1991, 25)

Such growth of tourism, so important to the nation, will occur only if the government of Zimbabwe takes a strongly supportive position, providing necessary assurances to the wildlife industry of investment security and establishing a climate of investor confidence (Bond 1997, 5-7). Yet, the most recent actions of the Department of National Parks and Wildlife Management might seem headed in the opposite direction. Doubts have been further raised by an August, 1999, draft "Zimbabwe Policy for Wildlife," prepared by the department and at an advanced stage of internal governmental review. Potential investors are not likely to be reassured by statements such as, "The Minister may impose a hunting restriction on any land or any wildlife species in Zimbabwe in the interests of conservation," or that "the Department will approve hunting quotas for all Appropriate Authorities"—presumably including the private land owners who were given appropriate authority status by the 1975 Parks and Wildlife Act.

The static nature of centrally decreed land size distorts resource allocation and dynamic response to changing circumstances.

The newly gazetted restrictions on land size throughout the country pose a further threat to investment in wildlife. It is unclear how conservancies and other forms of co-operative ranching can be established when many ranches are forced by decree to be restricted to uneconomically small sizes upon death or change of title. The system will have to be amended to allow for conservancies and other forms of co-operative ranching. There is an urgent need to address land inequities in Zimbabwe, but it would be much more equitable and efficient if widespread subdivision was freely possible and land taxes used to encourage subdivision. The static nature of centrally decreed land size distorts resource allocation and dynamic response to changing circumstances.

If Zimbabwe takes instead more supportive actions, over time there are likely to be more and more black Zimbabweans entering high-level managerial positions in the private-wildlife industry, and eventually moving into ownership positions. It is also incumbent on the private-wildlife industry to take strong actions on its own to encourage a greater role for black Zimbabweans in the future business of wildlife tourism. Greater efforts should be made to co-ordinate tourism on private ranches with tourism on communal lands, ensuring that the residents of these lands capture a growing share of the overall benefits. Such an effort is presently being made at the Savé conservancy, which perhaps can offer a useful model to other wildlife-management areas of Zimbabwe (du Toit 1998).

CONCLUSION

The southern region of Africa holds some of the most spectacular wildlife populations in the world. Initially, the protection of this wildlife took the conventional form of creating national parks and other special areas where most economic activity was excluded, borrowing on North American and European park models. However, by the 1970s it was apparent that few additional areas could be set aside in such a status. Indeed, the possibility even existed that some previously protected areas might be abolished in response to extensive poverty, growing populations, and increasing pressures to make more land available to the nations of the region.

Conservationists in southern Africa gradually came to two realizations: (1) the survival of existing protected areas would depend on showing their economic worth to the nation as a whole, and (2) any efforts to add to the areas of protected wildlife habitat would depend on making wildlife conservation economically advantageous to the existing residents of these areas. The greatest successes of this latter strategy have been found on large commercial farm and ranch lands where many landowners have converted to wildlife management as the most profitable use of their land. In communal areas, the districts there have also been given the authority under CAMPFIRE to manage use of the wildlife, enabling the residents to start the process of gaining some greater measure of wealth and income and a greater degree of control over their lives.

The need to reconcile wildlife-conservation objectives and human-welfare requirements is perhaps most compelling in Africa, but similar tensions are emerging throughout the world. Other nations may want to explore the privatization alternative more seriously, given the remarkable record of success that this experiment in private management of wildlife has already demonstrated in several southern African nations.

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