

Managing wildlife successfully in Zimbabwe

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Zimbabwe's approach to wildlife conservation started to change radically just over 30 years ago. Recognition of the fact that wildlife will only survive outside protected areas if the people who share the habitat are given responsibility for and derive benefits from wildlife has had positive effects for the conservation of the macrofauna. The author, the country's former Director of National Parks and Wild Life Management, describes the history of wildlife management in Zimbabwe and how the new approach is working.

Introduction

Wildlife is prospering in Zimbabwe where it is regaining land that had been lost to agriculture. Where 'land hunger' is intense, as in Zimbabwe, the area allocated to wild resource management, especially outside formal protected areas, is probably the single best measure of the success of a policy to conserve wild resources. It indicates the willingness of the people on the land to devote economic resources to that purpose.

Since 1960 the Parks and Wild Life Estate has increased from around 4.2 to 12.7 per cent of Zimbabwe. More importantly, land on which there is serious wildlife management outside the Estate increased from virtually zero in the late 1950s to 17 per cent or more of the country in 1988 (Cumming, 1989). By then the Wildlife Producers Association had grown to 450 members, from the 50 or so properties on which wildlife was used, often with the aim of controlling game numbers, in 1960 (Child, 1988). By 1995 there were 680 registered members of the Game Producers' Association (J. White, pers. comm.)

The Zimbabwean elephant population, estimated at about 4000 in 1900, had increased to some 30,000 head by 1960 (Cumming, 1981). The 1991 elephant census yielded 76,600 animals (Martin and Conybeare, 1992), of which 8700 (6.7 per cent) were outside protected areas (i.e. the Parks and Wild Life Estate and

Forest Reserves). This increase of around 45,000 animals in the national herd, in three decades, occurred despite the removal of at least 46,775 head during this period (Martin, 1992), mainly to relieve overcrowding in protected areas.

The success of the Zimbabwean wildlife conservation programme over the past three-and-a-half decades is in contrast to the situation in much of Africa. With similar demographic and economic challenges facing the resource in Zimbabwe as elsewhere, this success is attributable to the philosophy guiding local wildlife management. This paper describes how this satisfactory trend came about and why the Zimbabwean experience is significant for the spectacular fauna of the African savannahs, and for the people who share their land with these animals. It demonstrates the overriding importance of establishing appropriate socio-economic institutions for the successful conservation of wild renewable resources.

The resource

In common with much of Africa, Zimbabwe has a rich, diversified and spectacular macrofauna. These animals, their habitats and the socio-economic implications of maintaining them on land outside protected areas have been reasonably well researched and docu-

mented (see for example, Riney, 1982; Smithers, 1983; Child, 1988).

The fauna and flora reflect the environmental gradient from the wet savannahs in the higher rainfall areas of eastern Zimbabwe to the arid savannahs of the Kalahari in south-western Botswana (Cumming, 1982; Child and Child, 1986). The vegetational cline is mirrored by the structure and characteristics of the large herbivore fauna (Child, in press) and by the way in which the land is used to generate human benefits.

Where rainfall is highest the grasses are rank and the woody plants are generally unpalatable. The pristine fauna of this 'sour veld' was dominated by a few bulk-roughage feeders, such as elephant and buffalo. The quality of the forage rather than the quantity regulates animal biomass here, reducing the likelihood of over-use of the vegetation by animals (Cumming, 1982). Because of its relatively high agricultural productivity this is now the main crop-producing region of the country. Here wildlife survives mainly in pockets of 'waste land' and, increasingly, in small fenced game parks.

With declining rainfall, both the grasses and woody plants are more palatable. There appears to be no example of a fauna that has escaped the effects of the activities of modern humans through agencies such as fire, water manipulation or other habitat modifications. However, under natural conditions no species appears to have dominated the macrofauna, which comprised a broad spectrum of species with a range of feeding habits (Cumming, 1982). As in the past, quantity rather than quality of the vegetation controls animal densities in this 'sweet veld', hence the equilibrium between animals and their habitats is disturbed easily. In an undisturbed situation, the annual and seasonal distribution of surface water, coupled with the faunal characteristic whereby animals dispersed from perennial water while ephemeral supplies lasted, acted to prevent over-use of the plant cover.

In the arid Kalahari the ungulate fauna is characterized by solitary species, such as duiker and steenbok, or gregarious nomads

such as red hartebeest, wildebeest, springbok and eland. Much of the vegetation is palatable and animals derive their moisture requirements, for months at a stretch, from plants. These are mostly ephemerals, such as melons, that flourish locally only after good rains when forage growth in an area is also likely to be vigorous.

In the semiarid and arid regions the natural sources of moisture for herbivores were largely independent of their forage. However, the relative availability of the two was synchronized by the local abundance and frequency of rainfall. Moisture was most readily available where fodder plants were best able to sustain heavy animal use, which maximized the ungulate biomass that the rangelands could support without being damaged.

Because of the low productivity and high diversity of these arid and semiarid ecosystems, human benefits are best generated by harvesting the natural vegetation, using herbivores. As hunter-gatherers gave way to pastoralists, many of the self-regulatory processes in these savannahs were compromised by humans, particularly through the provision of artificial water-holes, fencing and the introduction of livestock, mainly cattle. Cattle are sedentary, gregarious, bulk-roughage feeders and now dominate the biomass, which was once characterized by species with a variety of feeding habits and movement patterns. With the provision of water-holes, the opportunistic exploitation of the vegetation by ungulates has been replaced by a steady animal pressure, often above the carrying capacity. This damages the habitats, especially when combined with the low financial profitability that is an increasing constraint to the livestock industry in more arid regions. Veld degradation results as the vegetation is suppressed beyond a succession of critical thresholds (Child 1968; Child *et al.*, 1971) over which recovery is problematical. True habitat regeneration is often effectively irreversible within a time-span measured in human terms (Child and Grainger, 1990).

Protected areas

Some 12.7 per cent of Zimbabwe is protected within the Parks and Wild Life Estate and another 2.4 per cent within Forest Reserves. Table 1 shows the categorization of the Estate into classes of protected areas, the number of sites in each class and the area of land involved. Having set aside so much land for biological diversity conservation, Zimbabwe has demonstrated its commitment to nature conservation. Ironically, the greatest threat to these areas comes from within, from excessively large elephant populations, which, combined with wild fires, are serving to simplify the ecosystems, causing 'ecological slums' (Child and Heath, 1992). The most noticeable casualties of this loss in biodiversity have been sensitive grazing species, such as roan antelope, sable antelope and tsessebe, which have disappeared or are disappearing.

History of wildlife and protected area management

Zimbabwe's indigenous Bushmen were hunter-gatherers. Their beautiful rock art is testimony to the fact that they both hunted and revered the native fauna, on which they probably had little lasting effect.

The Bushmen were replaced by waves of Bantu migrants, who introduced livestock and crops and had a more profound impact on

wildlife and its habitats. By the time of European colonization, in 1890, the Bantu had introduced weak institutions to curb the over-use of wildlife, had reserved certain wildlife for the exclusive use of the rulers, and had created a number of protected areas. Most of these areas were of religious significance and rather small, but a few, for example the royal hunting preserve on the Shangani River north of the modern city of Bulawayo, were extensive.

European settlement brought the wheel, modern communications, medicine and a proliferation of wild fires. There was rapid rural development and, in the space of 100 years, the human population grew from around 0.5 million to 10 million (Zimbabwe, 1989; Haub *et al.*, 1990). The impact on wildlife and its habitats was considerable, especially immediately after World War II when modern technology spread rapidly and population growth became exponential.

The white government was quick to introduce game laws. These were patterned on the Roman-Dutch law of the Cape Colony, which had borrowed from the experience of India (Anderson and Grove, 1987) in applying English-French concepts of centralized protectionism (Caughley, 1983). Such legislation differed little throughout the European colonies that virtually blanketed Africa and remains little altered on the statutes in much of the continent. Arguably, these laws have done more than anything, other than habitat loss, to

Table 1. Protected area coverage in Zimbabwe

Protected status	No. of areas	Extent (ha)	% Parks and Wild Life Estate	% Zimbabwe
National Parks	11	2,703,910	54.48	6.9
Botanical Reserves	14	1,468 (1,082)*	< 0.01	–
Botanical Gardens	3	553	< 0.01	–
Sanctuaries	5	16,140	0.33	–
Safari Areas	17	1,892,724	38.14	4.8
Recreational Parks	12	348,743	7.03	0.9
Total	64	4,962,784	100.00	12.7

* Some botanical reserves are located in protected areas of a lower legal status: only 1082 ha comprise independent reserves.

deplete wildlife in the 96 per cent of sub-Saharan Africa outside protected areas (MacKinnon and MacKinnon, 1986), because they discredited the resource among the rural masses who became marginalized from their wildlife.

The Zimbabwean centralized protectionist legislation, embodying the concept of the 'king's game', illustrated the inherent defects of such legislation. Of these flaws, those listed below are probably the most important.

- Disenfranchising land-holders from the game animals with which they are sympatric.
- Imposing the opportunity costs of protecting the animals on land-holders without compensation. This inequitable discrimination applied to estate holders and poor peasant communities alike, both of whom reacted against wildlife and the unfair discrimination directed at them.
- The separation of the game animals from the environment of which they are part. While the animals themselves were protected, the legislation had no power over how their habitats were managed outside protected areas. As a consequence land-holders were able to eliminate legally much wildlife by modifying habitats, or through such actions as fencing or denying the animals water. This had a much more devastating and long-lasting effect on wild populations than the hunting that the law sought to regulate.
- The under-valuing of the resource by denying it its true market value, with the commercial use of game animals being illegal before 1961. This was brought about through mechanisms such as restrictions on trade in wildlife products, low arbitrary hunting licence fees, and the capture of most benefits from the use of the resource by the State. Thus there was little incentive for people confronted by the costs of having wildlife on their land to tolerate the inroads on their livelihoods.

People had always the common-law right to protect certain classes of property, such as crops, livestock, fences and water installations, from wild animals. The old law in

Zimbabwe became unworkable when the High Court ruled that this right was much wider and that land-holders could protect all property, including natural forage on their land, from wild animals. By acknowledging the opportunity costs of having wild animals, the Court demonstrated the fallibility and inequity of the old legislation. The collapse of the law and the premises on which it was based coincided with a growing appreciation of the need to evolve a fresh and more positive approach to the conservation and use of the resource. This was perceived as vital to redressing the country-wide decline in wildlife and the growing threat to protected areas.

The new philosophy

Zimbabwe's current wildlife legislation and the concepts on which it is based were evolved through adaptive management over a period of 17 years, between 1958 and 1975 (Child and Nduku, 1985). They break with tradition in several important ways. Most importantly the law recognizes the fundamental differences necessary between the goals of wildlife management by the public and private sectors, inside and outside protected areas, respectively.

The prime purpose of the country-wide system of protected areas is to lay a solid foundation for the conservation of the nation's biological diversity. This diversity is critical, as Zimbabwe has already demonstrated most elegantly, for the ability of human societies to adapt to a changing biological or economic environment. Emergence of significant game-animal and wild-flower industries, to compensate for deteriorating terms of trade in traditional agricultural commodities, illustrates the value of having conserved the biodiversity on which the new ventures are based.

Protected areas are justified by the national insurance inherent in their role in conserving biodiversity and as a hedge against growing resource scarcities. They do, however, represent a substantial short-term cost in production foregone from the land being protected. Where resources are scarce, this

loss of production can lead to heavier demands on ecosystems outside the protected areas unless it is compensated for in some way. Furthermore, recent estimates, based on genetic theory, suggest that a well-designed system of protected areas can be expected to preserve only about 70 per cent of the local biodiversity (Soulé and Wilcox, 1980). Clearly, the aims of resource conservation, of maintaining both biodiversity and ecological productivity, are best served by integrating management in protected areas with innovative approaches to resource management outside.

Protected areas and wild resources outside protected areas

Zimbabwe has made a clear distinction between the aims of wildlife management in different classes of land. Conserving biodiversity, including ecological processes, is the prime justification for the Parks and Wild Life Estate, which may be used for purposes such as outdoor recreation provided there is no conflict with the primary goals of preservation. Even within the Estate the strategy to achieve these goals may vary, and parks and reserves are being viewed increasingly as bridgeheads from which to spread resource-use that is more environmentally friendly.

Land outside the Estate is designated for the maximum sustainable generation of human welfare. Unfortunately, land degradation is widespread (Whitlow, 1988) because much agriculture and pastoralism is unsustainable and the situation continues to deteriorate as resource scarcities intensify. Growing demands on the land are a product of:

- growing human population pressure, due to the high birth rate (42 per 1000), coupled with an economy that is growing much too slowly to compensate for the increasing pressure on the land;
- growing per capita consumption of natural resources, although this is still low by Western standards;
- the increased area under production, to compensate for the decline in the terms of

trade for common agricultural commodities. (in some cases this is more significant in the short term, at least, than population growth);

- ignoring 'hidden environmental costs', which do not show on the national or productive-sector balance sheets but are painfully apparent to ecologists – this is closely linked with the use of the rural sector to paper over defects in the national social and economic systems, for example the use of rural areas as social security for urban workers (Murphree and Cumming, 1993).

If wildlife and protected-area management are to be successful, they must avoid taking resources out of production and accelerating the poverty vortex. Instead they should contribute to alleviating these fundamental problems. Wildlife conservation deals with wild animals and plants, but is clearly a socio-economic process driven by resource scarcities and modulated by human aspirations. Solutions to ecological maladjustment are seldom successful unless they address the underlying social or economic causes. As far back as 1958 Zimbabwe started to accept that, if wildlife was to survive and prosper in much of the 85 per cent of the country outside protected areas, it would have to contribute to rural productivity.

Evolving successful wildlife management outside protected areas

It was clear that the key to successful wildlife management outside protected areas lay with the land-holders who had wildlife on their land. This was emphasized by the High Court decision described above. To induce land-holders to conserve wildlife, the rights to use it on their land were cautiously devolved to them and they were encouraged to maximize the financial benefit from doing so sustainably.

Doom and gloom proponents predicted the accelerated demise of the already declining macrofauna. They have been proved wrong by the steady improvement in the status of wildlife since the new strategy was introduced

formally in 1961 (Rhodesia, 1960). The Parks and Wild Life Estate has expanded significantly to cover 12.7 per cent of the country and wildlife is now actively managed in over 30 per cent of Zimbabwe. If there has been a problem on private land, it has related to overcrowding of wildlife leading to habitat impoverishment and the loss of species, due to the reluctance of the land-holders to curb wildlife numbers.

The robust model evolved on individually owned estates, now covering over 30,000 sq km (Cumming, 1989), has been embraced and adapted to their needs by peasant communities on over 13,900 sq km of communally held land, in the well-known CAMPFIRE programme (Metcalf, 1990; Child and Peterson, 1991; Child, 1993). This form of conservation, which is both popular and affordable on a large scale, is growing in strength and attracting much international attention as an example of successful community-based resource management. It is, however, only one of several major components in an integrated wildlife management agenda that is contributing to the success of wildlife conservation in Zimbabwe.

Conclusions

The successful wildlife strategy in Zimbabwe is based on five simple principles.

- 1 Wildlife is a renewable resource, which must be conserved and used wisely.
- 2 Wildlife has positive and negative economic values. It will survive in abundance outside protected areas only if it can compete with other land uses in contributing to human welfare.
- 3 The successful conservation of wildlife requires the active co-operation of rural land-holders. The resource will prosper on a broad front only if these people have an incentive to retain it. This requires that the rights to use the resource are allocated to the people with the animals on their land and they are encouraged to profit commercially from maintaining their animals.
- 4 The indigenous macrofauna can compete

with other land uses in all but the best agricultural areas because wildlife has a comparative economic advantage. This can be realized and wildlife will be conserved, however, only if the advantage is reflected in market prices and land-holders receive a sufficient share of the benefits.

5 Government has an obligation to preserve long-term wildlife values. To do this it must encourage and not inhibit a profitable and sustainable wildlife industry, while holding users accountable for the well-being of the resource. This is best achieved using ready-to-hand positive economic tools, rather than through negative coercion that depends on draconian legislation backed by increasingly massive law enforcement.

Wildlife and protected-area management in Zimbabwe face similar challenges to those evident throughout the continent. Zimbabwe's relative success has been due to 'getting the socio-economic institutions and prices right' so that they guide the conservation of the resource and the conduct of the industry based on it. The process has been based largely on common sense and has been relatively simple and cheap to implement. Already several other countries are moving towards a similar philosophy, which offers one of the few opportunities in arid and semi-arid African savannahs to address the problem of rural poverty.

These savannahs are the home of much of the continent's spectacular macrofauna. Zimbabwe's approach to conserving the fauna enhances both sustainable production and the preservation of biodiversity, adding economic and ecological resilience to the management of marginal lands. Replacing unsustainable agriculture and pastoralism with environmentally friendly wildlife ventures benefits the people on the land, wildlife and its habitats. Success depends, however, on a fundamental shift in attitudes, to which urbanites should subscribe in support of their country cousins around the world. It requires renewed acceptance of the age-old appreciation of wildlife as a renewable resource that can and should be used.

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