

Can wildlife pay its way?

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Conservation philosophy is swinging away from the traditional approach of setting up reserves to give absolute protection to wildlife and is replacing it with more realistic strategies. To succeed today, conservationists should take into account the needs of the people who share their land with wild species. The author examines some of the ways in which wildlife can be valuable to local people and made to pay for its own conservation – game viewing, sport hunting, game cropping and ranching. The advantages and pitfalls are discussed and it is concluded that while these uses are possible for some some wildlife species, others will never have a direct economic value. Someone will have to pay for their conservation – and it should not be those who can least afford it.

Absolute protection or consumptive use?

The conservation of wildlife grew out of a concern that wild animals were being over-exploited. Those most worried were often the exploiters themselves, particularly the big game hunters. Hence game reserves were established in many parts of the world to conserve animal populations for hunting and these were usually chosen to be the new national parks when the latter were developed. The original concept of a national park was that of an inviolable sanctuary within which wildlife is given absolute protection. This attitude is becoming increasingly questioned and many authorities now believe that wherever possible, wildlife should be exploited. Game viewing in national parks is, of course, a well-established and accepted form of exploitation but the consumptive use of wildlife has aroused some controversy. Not all conservationists are opposed to consumptive use. The World Conservation Strategy (IUCN, 1980) supports all forms of wildlife exploitation, provided they are carried out sustainably, on the grounds that the income so generated will increase support for conservation. This has led to the assumption that wildlife, if it is to be conserved, must pay its way.

As will be seen, there are many profitable ways of exploiting wildlife but there are prob-

ably numerous species that will never have an economic value and their conservation will cost money. This should not be too surprising; after all, one does not expect the preservation of ancient buildings to be cost-free. The problem with wildlife is that the people who wish to preserve it are rarely those who have to pay the cost. This is particularly true in Africa, where the peasant farmer whose crops are ravaged by marauding elephants becomes destitute while the well-off visitor from overseas enjoys a wildlife spectacle at minimal expense. One cannot expect the animals to be tolerated under such circumstances and it is now generally accepted that in the long term, wildlife will survive only if those people living in close contact with it want it to. They are unlikely to do so unless they receive some benefit. This need not be in cash terms because wildlife can pay its way, for example, through the supply of meat to a community. Subsistence hunting is indeed the usual method of exploiting wildlife in many parts of the world (Hudson *et al.*, 1989; Robinson and Redford, 1991).

Giving value to wildlife

If wildlife is to survive, some means must be found to reconcile the needs of the animals with the legitimate aspirations of the human

population. One solution is to give the wildlife a value so that local people will want to conserve it. There are a number of ways in which this can be done. Game viewing is one example that is already practised, as is sport hunting. More recent methods include game cropping and game ranching. The former refers to the taking of a sustainable yield from a completely wild population, whereas the latter, sometimes called game farming, implies some form of control of the wild animals, such as regulating their movements or breeding. None of these forms of management necessarily benefits the local people but the extent to which they could do so will be considered.

There are those who will not countenance any exploitation of wildlife that involves the death of animals. This is an animal welfare issue distinct from the conservation one and it is important not to confuse the two. It is right that any form of wildlife use that involves killing should be carried out as humanely as possible but a distaste for slaughter should not be disguised as an objection to cropping on conservation grounds.

Game viewing

It might seem that non-consumptive use of wildlife through game viewing is a proven earner, but wildlife tourism is a fickle industry, easily subject to the vagaries of the political climate. The merest hint of unrest in a country, or even in a neighbouring country, can lead to wholesale cancellations of bookings. Also, its profitability does not always seem so convincing on closer inspection. The capital investment necessary to develop the infrastructure for the tourist industry is very costly and some countries, such as Zambia, suffered a net loss when they first attempted to develop wildlife-based tourism.

The most successful African country has been Kenya where tourism earns about £400 million in foreign exchange a year, an income exceeded only by that from coffee (Barnes *et al.*, 1992). Nevertheless, who benefits? It is certainly true that several of the Kenyan national parks and reserves earn large sums in terms of

gate takings but the national parks as a whole receive very little, because most of the total expenditure by tourists goes to the airlines and hotels, which are often owned by foreigners. Eltringham (1984) put the parks' share in Kenya's tourist revenue at less than 1 per cent, although this was at a time when admission charges were very low and no doubt the proportion is now rather more, but it is still out of proportion to the contribution that the parks make in attracting visitors to the country in the first place. Like most developing countries, Kenya was unable to capitalize a wildlife industry on her own and had to rely on overseas funding. Foreign companies have been persuaded to invest in hotels through financial inducements, such as exemption from rates and convertibility of currency that allows a proportion of the profits to be exported (Myers, 1975). In effect the local taxpayer is subsidising the richer visitor. Very little, if any, of the income goes to the people living next to the reserves, unless they are employed in the hotel trade or act as guides, yet these are the people who risk their lives and livelihoods from the wild animals. It is not surprising that the enthusiasm for national parks is not shared by the ordinary African. This attitude might change, however, if some of the benefits from the presence of wildlife were passed on, as is happening through the many integrated conservation and development projects that are being developed throughout Africa (see below).

Sport hunting

Sport hunting is a specialized and high-cost form of tourism in the tropics, but elsewhere it is a relatively cheap recreational activity, particularly in the United States where wildlife certainly pays its way in terms of the expenditure on guns, clothing and licences. It is more of an elite pastime in Europe but is usually a lucrative form of land use. Sport hunting in Africa attracts fewer clients than game viewing but it is much more expensive so that the profits are greater per unit investment. It is a highly profitable and economically sound

form of land use for regions lacking scenic attractions or wildlife spectacles and which are too dry or infertile for efficient farming or ranching. A vigorous campaign has been mounted against sport hunting and several countries have banned the practice. Paradoxically, this has led to more animals being killed because the presence of hunters had a policing effect and once it had been removed, the poachers moved in. The loss of revenue from the banning of sport hunting has also meant that fewer funds are available from central government for antipoaching activities, not only in the game reserves but also in the national parks.

Game cropping for meat

Cropping has been carried out in many countries. In order to provide an economically viable yield, a wildlife population must be abundant and capable of replacing itself quickly. The latter point is important since the yield must be sustainable. There are few situations in which these conditions apply. Marine fish provide an example, although they are hunted rather than cropped, and over-fishing tends to be the norm. Most fish species are *r*-selected, i.e. they specialize in rapid reproduction and are able to recover from over-exploitation in a way that the more *K*-selected mammals, such as whales, cannot. Some mammal species, however, are suitable for large-scale cropping. The saiga antelope of the Russian steppes, with its early sexual maturity and high rate of twinning, is one. Only the males are horned so male-biased cropping is easy. This has the effect of greatly increasing the maximum sustainable yield, although the cropping must be carefully managed to avoid too low or too high a proportion of males, either of which could lead to a population collapse (Milner-Gulland, 1994). Seals also form ideal subjects for cropping because, apart from their rapid population growth, the surplus males are easily recognizable. This did not prevent the Antarctic seals being almost hunted to extinction in the last century. The fur seals of the Pribilof Islands in the north

Pacific Ocean are exploited more sensibly and the profits are ploughed into a welfare scheme for the benefits of the islanders, many of whom have no other source of income (Young, 1980).

There are few true hunter-gatherer communities left nowadays but the collection and sale of wild products still takes place in many countries. An example is the exploitation of turtle eggs, which, in the 1987 season, netted an average of \$US93.66 per household in one region of Honduras (Lagueux, 1991).

The wildlife that has most captured the imagination of would-be exploiters is that of the African rangelands. The vast herds seem tailor-made for cropping, but biomass should not be confused with productivity and maximum sustainable yields can be obtained only if the density is reduced by about half. Even so, this leaves plenty of animals. There have been many game-cropping schemes in Africa operated by governments or private companies, but it is probably fair to say that most of them have failed for one reason or another. Harvesting the crop proved unexpectedly difficult; both of the two main techniques – shooting or rounding up into a corral – have problems. Processing the meat to the standard required in commercial abattoirs is difficult and very expensive. Marketing the crop is a problem because centres of dense human populations, where the markets are, usually lie a long way from regions of high wildlife densities. Meat is a relatively low-value product and it is also highly perishable so that it is usually uneconomic to transport it over long distances. There may also be resistance from the established meat trade towards a competitive product as well as antiadvertising by some animal welfare societies. Most of the cropping schemes made a modest profit but not enough to encourage long-term investment. It was often only the sale of skins that made the enterprises worthwhile.

Cropping for non-meat products

Game cropping for products other than meat may turn out to be the more profitable

because the products tend to be less perishable and do not require expensive processing before sale. On the other hand, if such trophies are mass produced, their value will fall and cropping schemes may no longer be financially viable. Nevertheless, the sale of valuable wildlife products, such as ivory or rhino horn, has been a lucrative business but most of the proceeds have gone to wealthy overseas entrepreneurs and very little to the hunters, who take all the risks. The trade in both products is now banned, although that has not stopped the black rhino from being driven to the brink of extinction.

The elephant populations are in better shape and it would be possible to take a sustainable yield of ivory from them. There would be strong opposition to this from the animal welfare interests and there would be little point in reintroducing the trade unless illegality could be eliminated and effective controls established in the importing as well as in the exporting countries. Thus, tusks should be indelibly stamped and licences printed on paper of bank-note quality. The 'laundering' of poached tusks from one part of the continent by channelling them through a legal outlet in another could be detected as it is now possible to determine the origin of the tusks through isotopic analysis (Van der Merwe, 1990; Vogel *et al.*, 1990). The danger to elephants in the present situation is that because many of their populations now have no commercial value and are a potential threat to human life and property, they may be eliminated by the local people.

Barbier *et al.* (1990) provided an account of the ivory trade up to 1989, when it became illegal following the inclusion of the African elephant on Appendix I of CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna). They discussed the economics and, more importantly, the politics of exploiting elephants for ivory and conceded that there had been serious problems in attempts to regulate the trade. One is the fact that the elephant is not an open-access resource, such as the whale, although it had been treated as such. This meant that there had been little incentive to manage the re-

source as a long-term investment because the best return came from spending the elephant capital as well as the income. Although an off-take of 10 per cent per annum could safely be taken from a well-managed elephant population, other forms of land use are likely to be more competitive. Profits from the trade were not inconsiderable, however, for despite a decline in the production of raw ivory in Africa during the 1980s, the value of exports was between 50 and 60 million US dollars per annum during the decade and was still over \$US21 million in 1988, the year before the ban. These figures do not include worked ivory, which was probably worth at least as much again. A perennial problem has been corruption, which places the survival of the elephant at risk as well as reducing the social advantages of the ivory trade. A first step in combating corruption is to ensure that the resource is put under local ownership so that it can be properly managed. Even so, ivory production might not be the most economic form of land use except, perhaps, as part of a wider wildlife management project.

Cropping schemes – failures and successes

The principal reason for the failure of the early cropping schemes has to do with their organization. Governments were usually involved, either directly or indirectly, and the dead hand of bureaucracy usually ensured that the local people rarely saw their share of the proceeds. Perhaps the biggest failing was that the projects were usually imposed on the local people, who were not consulted over the ways in which the wildlife should be exploited. The obvious solution is to let the people organize the exploitation themselves, as has traditionally been the case (Marks, 1984). This has happened in Botswana with the introduction of a graded licensing system and there has been a number of community-operated schemes in other parts of Africa. One of the first was the Communal Area Management Plan for Indigenous Resources (CAMPFIRE) in Zimbabwe, which was put forward in 1984,

although it was not implemented until 1989. Essentially, the project involves the full participation of the local community through a company formed in each of the participating districts, with each adult holding one share (Martin, 1986). The people make the decisions over land use and can choose to exploit the wildlife for game viewing, hunting or cropping as they think fit. The advantage of the system is that everyone has a stake in the wildlife and, as joint owners, will ensure that it is exploited legally.

The project started in the Nyaminyami and Guruve Districts in the Zambezi Valley (Barbier, 1992). At the end of the first year of operation, Nyaminyami District earned a total of \$Z319,353 (\$Z11 = \$US1 in 1989) of which about 85 per cent came from hunting fees and the rest from meat and skins derived from culling and the control of problem animals. The surplus available for distribution was \$Z252,865, although this would have been only \$Z61,182 but for a contribution from ZimTrust, a local NGO. Each member of the co-operative received the sum of \$Z99.00, which may not seem much but it is a substantial amount in rural Zimbabwe and is additional to the normal income. The Guruve scheme produced a net revenue of \$Z236,214, of which \$Z67,614 came from the council-run safari operation and \$Z168,600 in fees from a private safari operator. A further contribution from ZimTrust raised the amount available for distribution to \$Z334,646. One of the wards within the district paid a dividend of \$Z200 to each of its 86 households but the amounts available in other wards were too small to be worth distributing and the money went instead to communal developments such as new school buildings.

There are other wildlife utilization schemes elsewhere in Africa which are operated by and on behalf of the community (Barbier, 1992). The Lupande Development Project, which was set up in 1985 in the Luangwa Valley of Zambia, developed into two CAMPFIRE-like operations, namely the Luangwa Integrated Resource Development Project (LIRD) and the Administrative Design for the Management (ADMADE) of Game Management Areas

(GMA). ADMADE is a wildlife management project under which 35 per cent of the proceeds are given to community projects within the GMA, 40 per cent goes to wildlife management and enforcement programmes, 15 per cent to the national parks and 10 per cent to the Zambia National Tourist Board. The LIRD is more wide-ranging and covers forestry, agriculture etc., as well as wildlife, but 60 per cent of the revenues is derived from wildlife projects. Under LIRD, 40 per cent of the revenue is made over to community projects and 60 per cent is spent on management and operating costs. The accumulated revenues of LIRD over the 2 years 1988–1989 amounted to \$US158,006 (Barbier, 1992). The economics of these projects are involved because the costs include a high proportion for capital investment and, once the schemes are established, the profits should increase. In addition to the income, the projects are important in providing employment. As a consequence of these benefits, wildlife protection laws are now group-supported and the level of poaching has declined considerably. There is no doubt that this is the best way forward if wild animals are to continue to coexist with the rapidly rising human population, although it remains to be seen if the administration infrastructure is adequate to cope with the organization of the schemes.

Ranching

The ranching or domestication of wildlife is possible, but after domestication the former wild animals may lose their apparent advantages over established domestic forms (King, 1979). There is often cultural resistance to such novelties because cattle are as much a form of currency as a source of meat, and it is unlikely that game ranching will displace conventional animal husbandry, at least in the tropics, where smallholdings are more common than large ranches. Combined game/cattle ranching is more likely and is already established in the more affluent countries of southern Africa, such as South Africa, which has 3500 game ranches (Grossman *et al.*, 1992). Crocodile

farming is an expanding industry in many African countries as well as in Asia, often with eggs taken from the wild. This is not a drain on the wild populations because a certain number of the hatchlings are released once they have reached a size that gives them immunity from predation (Blake and Loveridge, 1975). The 'farming' of deer is an important industry in many parts of the world (Yerex, 1982; Drew, 1989). The species involved are mostly red deer in the UK and New Zealand and fallow deer in Australia and Europe. The trade includes the breeding of park deer as well as the production of venison. In New Zealand, antler velvet is harvested for the Chinese pharmaceutical industry.

Conclusion

In conclusion, one can assert that under certain conditions, wildlife can make a substantial contribution to its own conservation but there are circumstances in which it cannot and if it is to be preserved, someone will have to pay for it. It is unreasonable to expect this burden to fall on those who can least afford it.

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