

Utilisation of National Parks with special reference to the costs and benefits to communities

Derek Hanekom and Louis Liebenberg

This paper provides some opinions on the utilisation of National Parks and nature reserves. These opinions are those of the authors and do not necessarily coincide with those of the ANC.

Introduction

There is broad agreement amongst many parties, including the ANC, that National Parks are important and that any new government must be committed towards promoting biodiversity. These Parks are a national asset, not simply because they attract tourists, but because they conserve a precious part of our heritage which belongs to all South Africans.

In the past the way in which the Parks were created was top-down and authoritarian. Local communities had little or no say and, far from benefiting from the existence of the Parks, lost out heavily. The objective of this paper is to ensure that any future policy is based upon a balanced approach in which the interests of all are fully reflected. Our intention is to open up debate and to facilitate that debate. We have no doubt that the local communities, if properly involved, will balance out their claims with the broad public interest. We believe that there is no inherent conflict - on the contrary, the survival of the Parks will be best guaranteed by ensuring that local communities understand their reason for existence and receive appropriate benefits which could include some share of revenue, compensation or appropriate alternative land as well as what we might call mixed areas on the periphery of the Parks functioning in ways that we set out. We feel that this rather than heavy fencing and aggressive policing would provide the best security for the Parks.

The problem is not whether or not to conserve the Parks but how best to ensure their conservation. The Parks are precious to many South Africans. They are a source of delight and we look forward to the day when it is not only the privileged who can share in that delight.

The creation of National Parks

The primary function of protected areas is to conserve ecosystems and biodiversity. The objectives of National Parks include the protection of representative samples of different habitats, the protection of rare species and the provision of research to further our understanding of ecosystems and their functioning. This is crucial from a national perspective in the sense that the health of the environment as a whole determines the viability of all systems, including agricultural areas. Lack of biodiversity may result in instability in the system which could have serious consequences. For example, an outbreak of viruses and insects in the absence of natural predators can result in crop failures (Carter, 1989). Furthermore, biodiversity plays an important role in regulating the earth's climate (Lovelock, 1979). The depletion of biodiversity may well result in the worst catastrophe ever to befall the human lineage (Ehrlich, 1988).

Of serious concern is the possible climatic changes that might occur due to the global Greenhouse Effect caused by industrial pollution. Some scientists believe that the extreme temperatures experienced over the last decade, the highest in recorded history, may be the first signs of such a change (Meadows, *et al.*, 1992). One of the problems of climatic change is that the extent and

severity of the change is fundamentally unpredictable. In the past, before the development of agriculture, climatic changes have not been smooth or orderly, but have been chaotic (Meadows, *et al.*, 1992). If this should happen, conventional farming could fail on a large scale, resulting in serious food shortages.

To survive such climatic changes would require flexibility and adaptability. This means that farmers should not invest everything in a small number of plant and animal species. In this context supplementing cattle farming with game farming, which involves a diversity of animals utilising a diversity of plants may have greater adaptability in the face of unpredictable climatic changes and provide insurance against drought. It is therefore important to retain the resilience of ecosystems. Conventional farming systems depend on keeping a small number of species in a constant condition, but in the process their resilience is reduced. By trying to keep a system in a constant optimal condition one can in fact severely hamper its ability to recover from serious disruptions (Bothma, 1989).

The best management strategy for both cattle and wildlife should therefore consider large ecosystems and long-term trends. In particular, more emphasis should be placed on habitat and ecosystem protection rather than on the protection of individual species (Bothma and Glavovic, 1992). Various land-use options should be developed in close co-ordination with each other. This can only be achieved through a holistic approach involving whole communities. Since short-term market considerations cannot cater for such long-term trends, the National Parks should not be managed as isolated islands of biodiversity, but should be part of an overall land-use policy. The problem is to reconcile all the many interests involved. In the past, the interests of local communities have been almost entirely neglected. What is needed now is that they should be brought fully into the picture, not as an exclusive voice but as an important participant.

This land-use policy should include taking cognisance of the following: Environmental education is important in bringing home the need for ecological and economic sustainability. In this regard National Parks have an important role to play, particularly for the communities in the immediate vicinity of Parks.

South Africa's National Parks are the most important draw cards for tourism, which could potentially become one of the major sources of foreign exchange. Tourism can also be one of the most effective means of spreading of wealth from affluent people to rural communities, provided that revenues generated from tourism flow directly to those communities.

The Kruger National Park is economically the most important National Park in South Africa. It is also the park that involves the most complex socio-political problems. This paper will therefore concentrate on the issues relating to the Kruger National Park, since the resolution of these issues could serve as an example for the other nature reserves. Similarly, experience gained in other parts of southern Africa could provide valuable guidelines for developing a new approach to the management of Parks in general.

Historical Background

When the Sabi Game Reserve was proclaimed in 1898, it covered the area between the Crocodile and Sabi rivers. In 1902 the people living in the Sabi Game Reserve were moved to north of the Sabi and south of the Crocodile rivers. In 1903 the Sabi Reserve Extension between the Sabi and Olifants rivers as well as the Shingwedzi Game Reserve between the Letaba and Pafuri rivers were added. About half the farms between the Sabi and Olifants rivers were owned by private land-owning companies, interspersed with government farms. People living in the area paid taxes to the Native Affairs Department. While they continued to farm with cattle, they were no longer allowed to hunt (Stevenson-Hamilton, 1952).

In 1923 the area between the Sabi and Olifants rivers was bisected by a line running in a north-south direction. Private farms were bartered for government farms, so that all the farms in the east belonged to the government and those in the west to private owners. With the proclamation of the Kruger National Park in 1926 the area of government land between the Olifants and Letaba rivers was added (Stevenson-Hamilton, 1952).

With the outbreak of foot-and-mouth disease in 1938 all the small stock and cattle of the people living in the park were destroyed. Compensation in money was regarded as inadequate and having been deprived of their meat supply many of them emigrated (Stevenson-Hamilton, 1952).

Costs and Benefits to Communities

While the reasons for creating National Parks may be sound, the costs and benefits to communities need to be considered.

In the creation of National Parks, some communities were forcibly removed without receiving adequate compensation for the land they lost and future planning must take this fact into consideration. People were denied access to resources such as grazing for cattle, hunting, medicinal plants, firewood and thatching grass. They were denied access to their ancestral graves. In the process they were alienated from their natural environment and they lost the traditional knowledge and cultural values associated with the natural environment.

Furthermore, anti-poaching laws were imposed by colonial governments without consultation with the people effected by these laws. From the perspective of the communities these laws therefore had no legitimacy and consequently poaching has always been a problem that had to be dealt with in an authoritarian way. While some conservation officials respected the rights of everyone in the area, many behaved in a paternalistic and racially prejudiced way, often regarding people in the area as the enemy to be kept at bay, and certainly as far less worthy of respect than the animals. This further alienated communities from conservation.

As far as the people are concerned, they were never consulted nor were they adequately compensated for the land they lost. They lost access to resources and gained no perceivable economic benefits. If anything, they only suffer damages from elephants destroying their crops and lions killing their livestock. From their perspective National Parks are not an asset to them. The only people who are seen to benefit are members of a privileged elite who come from outside. No-one can be happy if the people living around the National Parks would prefer to vote them out of existence rather than keep them as they are.

Accessibility

The resolution of historic land conflicts has been placed at the hub of environmental policy. In particular, the National Environmental Awareness Campaign has questioned the concern of conservationists almost exclusively to save endangered species or nature reserves patronised mainly by wealthy people, while land policies have impoverished people (Hart, 1992).

The perception that game reserves are for a privileged elite is based on the fact that most people simply cannot afford to go there. While the profitability of game reserves depends on the exclusive access to certain areas by high-paying tourists, some areas should be accessible to any member of the public.

Environmental education facilities should be visited by school children as part of their general education. Environmental education should be formulated for specific local needs, and should not be structured to respond only to the narrow demands of one value system (Fourie, 1991).

Unless the population as a whole can in principle have access to National Parks, conservation will always be perceived as elitist and irrelevant to the majority of people. Furthermore, communities must themselves be empowered to contribute to and enforce decisions that affect their environment.

Community Based Conservation

Some of the most successful examples of community-based wildlife conservation in southern Africa are the Campfire project in Zimbabwe and the Community Game Guard system in Namibia.

The essential philosophy of these programmes is that communities will conserve their wildlife resources if it is in their own interest to do so. Communities must therefore gain direct economic benefits from wildlife and be in a position to manage their own resources. While protected areas have always been managed in an authoritarian way, this new approach requires that conservationists must involve communities in decision-making.

The Campfire project in Zimbabwe was initiated after a law was passed in 1975 allowing communities to benefit from harvesting wildlife. Developing the project required both top-down legislation as well as bottom-up community participation. The Campfire programme enables rural communities to use resources such as wildlife to derive a financial income and use this income for rural development projects or as a household dividend. Communities can for example sell trophy hunting rights to a professional hunter or rights to operate photo safaris on their land to a tour operator. Or they can conclude joint venture and profit sharing agreements with private operators. With time communities will gain the skills to take increasing responsibility for carrying out these activities themselves. The most important aspect of this project is the process of enabling the community to be directly involved in the management of their own resources (Maveneke, 1993).

The Community Game Guard system in Namibia involves the employment of members of the community as game guards. The essence of the Community Game Guards system is that the game guards are appointed by the community and are primarily responsible to the community. The primary role of the system is to act as a mechanism for involving the community in conservation and giving them responsibility for the management of wildlife resources. Some of these game guards have in fact been poachers themselves, who now use their tracking skills to combat poaching. Apart from their tracking abilities, their effectiveness is also due to the fact that they can rely on members of the community to report the movements of strangers. This makes it very difficult for poachers from outside the community to move around undetected. The success of this system therefore depends on the cooperation of the whole community, or at least the majority of the community (Owen-Smith, pers. comm.).

Advantages to the community include continued use of the land for livestock, salaries paid to community game guards, meat from culling of wildlife and income from tourism.

Initiatives in South Africa include the Richtersveld National Park which is a contractual park. This contractual agreement was negotiated after the people of the Richtersveld resisted attempts by the Parks Board to remove them. The result is a Management Plan Committee consisting of members of the community and the Parks Board who jointly make decisions concerning the management of the park. The Parks Board provides technical expertise and recommendations are reviewed by the committee. Livestock grazing is allowed in all areas of the Park, while the community is compensated for the limits on stock numbers in the Park. The involvement of the community in the establishment of the Richtersveld National Park represents a fundamental ideological paradigm-shift and is of crucial importance to the whole future of the Parks Board system in a democratic South Africa (Fig and Archer, 1993).

The fact that proposals for the establishment of the Richtersveld National Park could be made

unchallenged without the knowledge of the local inhabitants for as long as ten years is illustrative of the way conservation was conducted in South Africa until recently. It illustrates a top-down, bureaucratic and narrow approach to conservation, in the process ignoring opinions, perceptions, values and interests of the people most affected by the proclamation of a conservation area. The establishment of the Richtersveld National Park was perhaps a painful exercise for the Parks Board, but it created the awareness of the importance of community involvement at all levels and at all stages of the conservation process (Fourie, 1993). Wildlife managers can no longer afford not to get involved in community development programmes (Fourie, 1991).

While these models represent a fundamental shift away from the old approach to conservation, they are not without problems. Communities are not homogeneous entities and development projects often create new divisions and disputes within communities. It is therefore not possible to impose a blueprint onto a community. Rather, a process of development should address problems that are unique to each area and community (Baskin, 1993). Furthermore, it should be emphasised that intergrating conservation and community development is a process which is very time-consuming.

Indirect Economic Benefits

The above mentioned examples are in areas of low population density and involve fairly well-defined communities. Applying the basic principles to an area such as the eastern Transvaal will involve a number of complexities.

Outside the Kruger Park the human population density is very high. It is unlikely that the park itself could provide employment for everyone and the resources that can be exploited are limited. One therefore needs to look at the direct economic benefits, regional benefits and the national economic role of the Park. This is further complicated by the existence of private game reserves separating the park from communities, and the role these private game reserves should play.

National Parks are a source of foreign exchange that benefits the country as a whole. Furthermore, some National Parks are being subsidised by more profitable Parks such as the Kruger National Park. Economic benefits of National Parks should therefore be seen at regional and national levels.

Some of the income generated should therefore be used to stimulate the regional economy. This, however, should be done in a way that makes it clear to the local communities what the economic benefits of the National Park are to them. Funds could, for example, be channelled through the Parks Board directly to the community for community development. Consideration should also be given to profit sharing or joint venture programmes. This should be done through structures in which the community is represented, since authorities not accountable to the community will not enjoy their trust. Indirect economic benefits should therefore be visible and tangible.

Utilisation of Resources

What we would like to see discussed is the kind of approach that has been the most successful elsewhere in Africa. The issues need to be discussed in a calm and sober way without sensationalism, and subject to the clear understanding that the overall objective is to ensure that through justice to all, the Parks will be preserved and not undermined. In that context, we offer the following observations with a view to promoting debate.

The relationship between precolonial people in southern Africa and the land, was governed by a land ethic which was based on a non-destructive, largely sustainable relationship with the land. Whether hunter-gatherers (such as the San), herders (such as the Khoi), or settled agriculturists (such as the Nguni), it would be true to say that Africans saw themselves as an integral part of the environment, and that an acceptance of the inter-connectedness of the land, its resources and all living things found

expression in their folklore, poetry, religion and language (Khan, pers. comm.).

The idea that human beings are an integral part of the environment, is central to the traditional land ethic and is diametrically opposed to the wildlife-centred, game preservationist approach which formed the basis of the conservation ideology which developed during the late nineteenth century. The conservation movement, which evolved from this, continued to cling to a romantic notion of Africa as an untouched Eden, instead of what it has always been: a *managed* environment, shaped and shared by human beings. It is this conservation ideology which we have inherited from the colonial past, with its 'hands off' approach to parks and reserves, in which human beings are regarded as interlopers, which has supplanted the more holistic traditional land ethic. Clearly, what is needed, is a return to an ethic in which the land and all living things are responsibly cared for. Translated into more modern terms, an holistic environmental ideology based on the sustainable use of the environment. We need to return to integrated land use and consider the concept of 'multi-use' parks, in which land uses such as grazing and farming are allowed (Khan, pers. comm.).

The Kruger National Park covers a large area from which people have been removed over the last hundred years to create an artificial wilderness. It is in fact unnatural for African wildlife to find themselves separated from human populations, since humans co-evolved with animals in Africa over millions of years. There is therefore in principle no reason why humans should not be part of the ecosystem provided that their relationship with the animal populations is a balanced one as it was in the past.

Apart from indirect economic benefits, it is also important that the community should enjoy direct benefits that will involve members of the community in the management of the park. These benefits could include grazing rights, (especially in drought years), hunting, and utilisation of medicinal plants, firewood and thatching grass. From a conservation perspective it needs to be determined to what extent such utilisation can be allowed without compromising the integrity of the ecosystem.

If grazing rights are allowed in wildlife areas, the veterinary red line area will have to include the areas utilised by the cattle farmers. Areas considered to be at risk include the communal areas near the Kruger National Park (van Rooyen and Du Toit, 1989). Consideration should therefore be given to the possible spread of disease. Cattle could be confined to peripheral areas not utilised for tourism so that the presence of cattle does not negatively influence tourism. The risk of stock losses due to predators would have to be negotiated with the cattle owners. In fenced off areas cattle owners may claim compensation. On the other hand, during periods of severe drought cattle owners may want to let their cattle graze inside the park at their own risk. Cattle could therefore be managed as an integral part of the overall environmental management of the region.

Decisions on grazing rights should consider local demographic and social factors. Cattle owners should be consulted, as well as people who do not own cattle, since such decisions may benefit some but be a disadvantage to others. Cattle owners should also be involved in determining whether cattle ranching is viable and sustainable compared to alternative land-use options.

Employment

Employment in the park itself can be expanded by developing labour intensive eco-tourism. For example, small bush camps offering guided game drives and bush walks not only provides a better service but also creates more jobs per tourist.

Crafts marketing can be stimulated by giving the local crafts industry preference over imported curios. For example, some curio shops even sell plastic animals in direct competition with locally produced curios. In contrast, local craftsmen and women line the roads leading up to the entry gates to the park, while most tourists do not have time to stop because they need to reach the camps before dark.

Craftsmen and women should be given the opportunity to sell their crafts inside the tourist camps. In the process of empowering rural communities they should also be assisted to gain access to marketing outlets in cities.

Over and above traditional crafts, consideration should be given the establishment of an arts and crafts training centre. The potential of creating tanning and leathercraft industries, based on the annual production of animal skins in the Kruger National Park, should be developed (Fourie, 1991). Screen printing, pottery and other crafts can also be developed.

The local economy can also be stimulated by maximising the available human resources. For example, money spent on salaries goes into the community, while money spent on expensive technology goes to first world countries. Traditional skills and expertise can also be used in research on animals and plants. Expert trackers have, for example, been employed in studying the ecology and behaviour of lions and leopards in the Kalahari Gemsbok National Park (Eloff, 1973a, 1973b and 1984; Bothma and le Riche, 1984, 1986, 1989 and 1990). Although traditional knowledge systems may differ from Western scientific belief systems, they involve essentially the same scientific reasoning (Liebenberg, 1990).

Poaching

The first restrictions on hunting were imposed by Van Riebeeck in 1657. Since then almost a hundred statutes and ordinances have failed to stop the reduction of wildlife (Bothma and Glavovic, 1992). The law has not been effective and there is therefore a need for an entirely new approach to nature conservation.

In dealing with poaching, which has been identified by some conservationists as the most serious threat to wildlife, a distinction should be made between subsistence harvesting and commercial poaching.

Subsistence harvesting involves hunting of animals for food, a legitimate means of subsistence outlawed by colonial governments. Commercial poaching, on the other hand, involves the killing of animals such as rhinos and elephants, and while very little is paid to the poachers, considerable profits are made by the smuggling syndicates. However, while it is the poacher who gets shot in countries that have adopted a "shoot on sight" policy, the smugglers usually get away.

Zimbabwe's paramilitary programme with orders to kill on sight resulted in 158 poachers killed for the loss of 1000 rhino (Johns, 1993). Fire-power is therefore no guarantee of wildlife protection. If anything, it may well complicate the situation by alienating people from conservation. By killing poachers, the perception may be created that animals are worth more than humans. A "shoot on sight" policy should therefore be avoided at all cost. In the event of rangers being forced to defend themselves against aggressive poachers, great care should be taken to ensure that the justification of such action is supported by the community.

Subsistence hunters can be involved as partners in the management of the park and thereby act as a source of information to track down commercial poachers and smugglers. Subsistence hunting could, for example, be conducted under supervision in peripheral areas as part of the culling programme. In this way the park will save on salaries while involving the community more directly in the process.

Multispecies Animal Production Systems

While it is important to make National Parks relevant to communities by getting local people involved in the management and utilisation of these areas, the opposite process can also be beneficial. For example wildlife can be introduced into communal and farming areas as an alternative resource supplementing conventional farming. By broadening a community's resource base, they become more

self-sufficient and buffered against drought and other hardships, and become less dependent on government for support.

Cattle, sheep and goats first reached Southern Africa about 2000 years ago and an indigenous livestock pastoralism was developed combined with subsistence hunting. Over centuries multispecies pastoral and agro-pastoral systems developed as the most ecologically and economically sound land use systems. European colonization led to the introduction of new livestock breeds as well as commercial single species production systems (Nel, 1993).

Bad land management practices have in the past led to extensive degradation and bush encroachment, drastically reducing the land's carrying capacity. Economic need would also be likely to pressurise farmers to overstock and so continue degrading the land (Nel, 1993). Economic deprivation of landowners is one of the major factors which threatens biological diversity (Bothma and Glavovic, 1992).

Increasing soil erosion threatens the future sustainability of food production in South Africa (Cooper, 1991; van Oudtshoorn, 1991; Verster *et al.*, 1992). Soil conservation and wildlife conservation are closely related and interdependent. Without soil conservation, climax vegetation with its associated animal life will disappear; without wildlife conservation, the vegetation is deprived of important protection and ultimately the soil itself will be lost (Verster *et al.*, 1992).

Since the late 1950s commercial ranchers have again been incorporating wild game in their production systems. The economic utilization of wildlife by themselves or combined with livestock is proving more profitable and sustainable than livestock alone (Nel, 1993). In the process game ranching has also led to the recovery of natural habitats (Bothma and Glavovic, 1992).

Game farming can theoretically produce a higher meat yield than cattle farming without resulting in a deterioration of the vegetation (van Oudtshoorn, 1991). While cattle farming may result in bush encroachment and erosion due to over grazing, farming with a diversity of species can improve the condition of the veld, since different animals feed on different plants. Furthermore, a mixed cattle and game farming approach may combine advantages of both, especially when Nguni cattle rather than imported breeds are utilised.

Wildlife can increase the revenue earned per kilogram of animal in the veld. Wild animals gain weight more quickly than domestic stock and they breed faster. Game meat is also leaner and healthier than beef, which has a high cholesterol content. Skins are more valuable than cowhide. In addition game farming also has the potential to generate income from tourism and safari hunting (Cole, 1990). Furthermore, on a macro-scale, the stability of the tourism market over the long term might be a better economic risk than the fluctuations of livestock where drought is an unpredictable factor (Nel, 1993).

African wildlife is also better adapted to the African environment than cattle, especially in terms of regular droughts. Uneven distribution of rains also required animals to migrate, resulting in intensive utilisation of areas followed by periods of rest (van Oudtshoorn, 1991). Larger farming units managed on a communal or co-operative basis may therefore create more productive ecological systems. Ideally large areas may be enclosed by a game proof fence, while areas of cultivation and livestock within the larger area may be protected from wildlife depredation by electrified fences.

Conclusion

National Parks should not be isolated islands of biodiversity, but should be part of an overall land-use policy. Such a policy should consider large ecosystems and long-term trends, and various land-use options should be developed in close co-ordination with each other. This requires a holistic approach

involving whole communities. Communities must gain direct economic benefits from wildlife and be empowered to take responsibility for the management of natural resources. Furthermore, wildlife managers need to become involved in community development programmes. Unless the population as a whole has access to National Parks, conservation will continue to be perceived as elitist and irrelevant to the majority of people. The challenge facing a new democratic government is to make the National Parks a truly national asset that benefits all the citizens of South Africa.

Acknowledgements

We would like to thank Albie Sachs, Stan Sangweni, Farieda Khan, Chris Brown, Tony Ferrar, Johan Fourie, Fiona Archer and David Fig for criticism and advice. Materials quoted from come from a section of the population only. In essence what we are asking for is that the voices of all South Africans be heard on the subject. Only in this way can we ensure that nature conservation truly become a national concern.

References

- Baskin, J. 1993. "How to promote community participation in development projects." Presentation given at the conference on "People and Parks", organised by the Group for Environmental Monitoring, May 1993.
- Bothma, J. du P. "Important ecological principles." In J. du P. Bothma (ed.) *Game Ranch Management*. Pretoria: J.L. van Schaik.
- Bothma, J. du P. and P.D. Glavovic. 1992. "Wild Animals." In R.F. Fuggle and M.A. Rabie (eds.) *Environmental Management in South Africa*. Cape Town: Juta & Co, Ltd.
- Bothma, J. du P. and le Riche, E.A.N. 1984. 'Aspects of the ecology and the behaviour of the leopard *Panthera pardus* in the Kalahari Desert. *Supplement to Koedoe*, 27: 259-279.
- Bothma, J. du P. and le Riche, E.A.N. 1986. 'Prey preference and hunting efficiency of the Kalahari desert leopard.' Pages 389-414. In: Miller, S.D. and Everett, D.D. (eds.), *Cats of the World: Biology Conservation and Management*. National Wildlife Federation, Washington, D.C., U.S.A.
- Bothma, J. du P. and le Riche, E.A.N. 1989. 'Evidence of a flexible hunting technique in Kalahari leopards.' *S.Afr.J. Wildl. Res.*, 19(2).
- Bothma, J. du P. and le Riche, E.A.N. 1990. 'The influence of increasing hunger on the hunting behaviour of Southern Kalahari leopards.' *Journal of Arid Environments*. 18, 79-84.
- Carter, N. 1989. "Britain's unchecked plague of aphids." *New Scientist*, 10 June 1989.
- Cole, M. 1990. "A farm on the wild side." *New Scientist*. 8 September 1990.
- Cooper, D. 1991. "From soil erosion to sustainability." In J. Cock and E. Koch *Going Green*. Cape Town: Oxford University Press.
- Ehrlich, P.R. 1988. "The Loss of Diversity: Causes and Consequences." In E. O. Wilson (ed.) *Biodiversity*. Washington, D.C.: National Academy Press.
- Eloff, F.C. 1973a. 'Lion predation in the Kalahari Gemsbok National Park.' *J.S.Afr. Wildl. Mgmt. Assoc.* 3(2): 59-63.
- Eloff, F.C. 1973b. 'Water use by the Kalahari lion *Panthera leo vernayi*.' *Koedoe*. 16:149-154.
- Eloff, F.C. 1984. 'Food ecology of the Kalahari lion *Panthera leo vernayi*.' *Supplement to Koedoe*,

1984: 249-258.

- Fig, D. and F. Archer. 1993. "Empowerment and the environment: Towards effective community participation in management of the Richtersveld National Park, South Africa." Unpublished typescript.
- Fourie, J. 1991. "The concept of life: on the social role of conservation areas." *Koedoe*. 34(2): 157-165.
- Fourie, J. 1993. "The National Parks Board and its future relations with neighbouring communities." *Koedoe*. (In Press).
- Hart, T. 1992. "Socio-Political Factors." In R.F. Fuggle and M.A. Rabie (eds.) *Environmental Management in South Africa*. Cape Town: Juta & Co, Ltd.
- Johns, M. 1993. "Ghetto-blasters, guns and zebras: Community Conservation in Zambia." *New Ground*. No.11. Autumn 1993.
- Liebenberg, L.W. 1990a. *The Art of Tracking: The Origin of Science*. Cape Town: David Philip Publishers.
- Lovelock, J.E. 1979. *Gaia. A New Look at Life on Earth*. Oxford: Oxford University Press.
- Maveneke, T. 1993. Keynote address at the conference on "People and Parks", organised by the Group for Environmental Monitoring, May 1993.
- Meadows, D.H., D.L. Meadows and J Randers. 1992. *Beyond the Limits*. London: Earthscan Publications.
- Nel, C. 1993. "Game plus livestock for extra profit." *Farmer's Weekly*. July 9, 1993.
- Owen-Smith, G. Personal Communication.
- Stevenson-Hamilton, J. 1952. *South African Eden*. Cape Town: Struik.
- van Oudtshoorn, F.P. 1991. *Gids tot Grasse van Suid-Afrika*. Arcadia: Briza Publikasies.
- van Rooyen, J. and J.G. du Toit. 1989. "Factors to be considered when buying a game ranch." In J. du P. Bothma (ed.) *Game Ranch Management*. Pretoria: J.L. van Schaik.
- Verster, E., W du Plessis, B.H.A. Schloms and R.F. Fuggle. 1992. "Soil." In R.F. Fuggle and M.A. Rabie (eds.) *Environmental Management in South Africa*. Cape Town: Juta & Co, Ltd.

C:\WP51\ARTICLE1\140693