Biodiversity conservation outside state protected areas

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Uittreksel

Dit is moontlik om ‘n hoë persentasie van die oorspronklike biodiversiteit op privaat of gemeenskaplike eindom te bewaar. Die grootse deel van beide die bewaarde land, en die plant-, dier-, voël- en reptielpopulasies in Suid Afrika, is huidig buite die formele bewaringsisteem.
Die bewaaring van biodiversitiet kan gepaard gaan met optimale ekonomiese benutting van die grond.
Gesamentlike bestuur, tussen bure en tussen die privaatsektor en die staat, is meer doeltreffend en goedkoper as individuële, ongekoordineerde bestuur.
Provinsiale en nasionale bewaringsteikens kan slegs bereik word deur ‘n geïntergreerde sisteem, waarvan privaat bewaringsondernemings ‘n belangrike deel vorm.

Introduction

When most people think of strategies for conserving plants and animals, they automatically think of the system of large and small parks and reserves set up and maintained by the provincial or national authorities. This is indeed a responsibility of government, and in South Africa we are justifiably proud of our formal conservation system. The point that most people miss, however, is that the vast majority of the nation’s wild populations exist outside of this framework.

South Africa currently has about twice the area under non-state conservation as under state-controlled conservation. This includes both land that is privately owned and land that is communally-owned. The degree of protection afforded varies from high, such as in private nature reserves, to partial, such as fragments of land within a mostly transformed landscape, that have been set aside by the landowners for the protection of a spring, or a bird nesting area, or a population of flowering plants. Similarly, the permanence of the protection offered varies considerably. Empirically, some non-state conservation areas have been as stable as the best state-owned parks. Others are based on the whims and economic circumstances of the owners. This ‘informal’ aspect of private conservation has kept the area conserved in this way out of the statistics, and to a large degree outside of the national conservation planning framework. ‘Conservancies’, in other words formally-constituted, state-recognised associations of adjacent land-owners committed to co-operative biodiversity conservation (in various combinations with other, compatible land uses), fall towards the ‘well-protected’ end of this continuum of conservation status.

There are three main reasons why conservation outside of the state-owned system is critical to the overall objective of conserving biological diversity and ecosystem function at the local, national and global scale. They are

1. Managing, in a sustainable way, a more significant fraction of the land surface that would be possible under a solely state-run system.
2. Optimising the economic potential of conservation management.
3. Providing a networked landscape that permits the migration and adaptation of species in a varying world and the simulation of large-scale processes.

These three reasons are explained in more detail below.

Enlarging the conservation estate

South Africa has steadily increased its official protected area, reaching the international target of 10% of the land area. There are strong constraints to increasing this fraction further:

> In South Africa there is not a tradition of large areas of state-owned land. The overwhelming majority of the land (>85%) is either privately-owned (freehold) or communally-owned. Therefore acquisition by the state of new land for conservation purposes is both very expensive and politically divisive.
> Land is an economically-productive asset. If too large a fraction is placed under management regimes that are highly restrictive regarding what can be done on the land, then a penalty is paid in terms of economic growth, food production and job creation. Whereas state-run conservation areas are also economically-productive, both directly in terms of tourist revenue, and indirectly in terms of the 'magnet effect' they exert on neighbouring developments, experience shows that governments are not the most efficient mechanism for creating value-addition.

If we rely purely on a state-owned system of protected areas, we will inevitably end up with a system of 'islands' of conserved land in a matrix of unconserved land. In practice the islands are unlikely to exceed much more than 10% of the landscape. If their distribution were perfectly optimised, we could probably have 90% of the species endemic to the country having part of their distribution within a protected area. However, this would constitute 'winning the battle but losing the war' for the following reasons:

1. The distribution of formal protected areas is not optimal. It is generally the result of historical accidents and a somewhat ad-hoc acquisition policy, highly constrained by land and fund availability. Therefore many important populations of endangered species occur outside of the system.
2. The populations within the system are in many cases too small to be viable.
3. Protecting a single population is risky. What if a chance event, such as a disease outbreak, should eliminate it?
4. This approach conserves 'compositional diversity', but not 'functional diversity'. In other words, it preserves the parts, but not necessarily the working machinery of the ecosystem. Functional diversity, which includes things like the ability of nature to provide clean water and air, fertile soil and to control the outbreaks of pests requires a much larger fraction of the landscape to be in a healthy state.

Work currently underway at the CSIR shows that the land outside of formal protected areas maintains a very large fraction of the original biodiversity, even when the land is used primarily for other purposes. Biodiversity, in this case, is measured as the size of the *populations* of endemic species, not simply the number of species, and is calculated for all the well-documented groups of species: plants, mammals, birds, reptiles and amphibia. If the landuse is 'sustainable' (ie within best practice guidelines), the fraction of the biodiversity retained approaches that in fully protected areas.

Realising the economic potential of the land

A high level of biodiversity protection is compatible with economically productive use of the land. In some instances, the best economic use of land that is agriculturally marginal (ie, too steep, too dry, too infertile or too far from markets) is some form of ecotourism or sustainable nature-based harvest such as hunting. These uses are almost totally compatible with biodiversity conservation. Where such uses are conducted by the private sector rather than the state sector, the returns per unit land area are generally substantially higher. Entrepreneurs are usually more efficient at providing tourism services than are organs of the state. A combination of a state-run 'core area' with peripheral non-state areas under compatible uses is the essence of the 'biosphere reserve' concept, and is often a robust and successful model.

Where the primary land use is not nature-based, but based on grazing or crop agriculture, it can still be highly compatible with biodiversity protection. Typically only particular groups of species are disadvantaged. For instance, where cattle ranching is the main use, large indigenous grazers are reduced because they compete with cattle for grass, and may be reservoirs of veterinary disease. But birds, plants, reptiles, frogs and small mammals may be unaffected, provided that key habitats are protected, the use of biocides is limited, and grazing practices are within norms.

There are significant 'economies of scale' in biodiversity conservation. The operating costs of conservation areas decrease per unit area as the area increases, because they are dominated by 'edge effects', such as fencing and preventing poaching. This is an argument for collaborative management, both between neighbours in conservancies, and between private and state parties.

A connected landscape

Current biodiversity planning is based on an assumption that the environment does not change. The layout of the conserved areas is optimised on the basis of the present distribution of species. What happens if the climate changes, and hence the distribution of species, as we know that it will do in the next century?

For plants and animals to adapt to a changing climate, they need to be able to migrate through it. It is not practical to design a 'migrating' formal conservation layout. Rather, movement corridors that make use of non-state land are needed to link statutory conservation areas and provide a sufficient level of biodiversity protection outside reserves.

Even without the climate change scenario, ‘connectivity’ in the landscape is essential in maintaining viable populations of both highly-mobile species, such as birds or large mammals, and sedentary species such as plants. One consideration is gene flow – the exchange of genetic material between populations, that keeps them healthy. Another consideration is the accommodation of large-scale processes, such as dispersal, within small-scale areas.

Conclusions

A very high level of biodiversity protection is possible on private or communally-owned land.
It can be compatible with optimal economic use of the land.
Collaborative management between neighbours, and between the state and private sector, is cheaper and better than uncoordinated management.
Provincial and national conservation goals cannot be achieved without effective integration of conservation on non-state land.