

Larger than elephants

Inputs for the design of an EU strategic
approach to Wildlife Conservation in Africa

Volume 2: Southern Africa
DRAFT DOCUMENT

SOUTHERN AFRICA

African elephant standing in the shade of a Sycamore fig on the banks of the Zambezi River.

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ACRONYMS

ADMADE	Administrative Management Design
AEAP	African Elephant Action Plan
AEWA	African-Eurasian Migratory Waterbird Agreement
AfRSG	IUCN African Rhino Specialist Group
ARP	African Rhino Programme
AU	African Union
AWF	African Wildlife Foundation
BIOPAMA	Biodiversity and Protected Areas Management
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CAPE	Cape Action for People
CAR	Central African Republic
CBD	Convention on Biological Diversity
CBNRM	Community Based Natural Resource Management
CBO	Community Based Organisation
CBT	Commodity Based Trade
CC	Climate Change
CEE	Council of Elders for the Environment
CERU	Conservation Ecology Research Unit
CI	Conservation International
CITES	Convention on International Trade in Endangered Species
CMS	Convention on Migratory Species
DNA	Deoxyribonucleic acid
DRC	Democratic Republic of Congo
EAC	East African Community
ECOWAS	Economic Community of West African States
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FLEGT	Forest Law Enforcement, Governance and Trade
GDP	Gross Domestic Production
GIS	Geographical Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GPS	Global Positioning System
GMA	Game Management Area
IBA	Important Bird Area
ICA	Independent Conservation Area
IFAW	International Fund for Animal Welfare
IRDNC	Integrated Rural Development and Nature Conservation
IUCN	International Union for Conservation of Nature and Natural Resources
KAZA	Kavango Zambezi Transfrontier Conservation Area
KfW	Kreditanstalt für Wiederaufbau - Development Bank
LIFE/LIFE+	EU funding instrument for the environment
MAB	Man and the Biosphere Programme
MDG	Millennium Development Goal
MIKE	Monitoring the Illegal Killing of Elephants
MIKES	Monitoring of Illegal Killing of Endangered Species
MIST	Management Information System
MODIS	Moderate-resolution Imaging Spectroradiometer

MOU	Memorandum of Understanding
MTRE	Masters in Tropical Resource Ecology
NASA	National Aeronautics and Space Administration
NASCO	Namibian Association of CBNRM Support Organisations
NCA	Northern Conservation Area
NEPAD	New Partnership for Africa's Development
NGO	Non-governmental Organization
NP	National Park
NRMP	Natural Resources Management Project
NTFP	Non-timber forest products
OIE	World Organisation for Animal Health
PES	Payment for Ecological Services
PIKE	Proportion of Illegally Killed Elephants
PPF	Peace Parks Foundation
PPP	Public Private Partnerships
RDC	Rural District Council
REDD/REDD+	Reduced Emissions from Deforestation and Forest Degradation/REDD+
RhoDIS	Rhino DNA Index System
SA	South Africa
SADC	Southern Africa Development Community
SAWC	Southern African Wildlife College
SAWEN	Southern African Wildlife Enforcement Network
SMART	Spatial Monitoring and Reporting Tool
SSC	Species Survival Commission of IUCN
SULi	Sustainable Use and Livelihoods Specialist Group
TAHC	Terrestrial Animal Health Code
TFCA	Transfrontier Conservation Area
TRAFFIC	Trade Records Analysis of Fauna and Flora in Commerce
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environmental Program
US/ USAID	United States/ US Agency for International Development
VGL	Veterinary Genetics Laboratory
WCS	Wildlife Conservation Society
WEN	Wildlife Enforcement Network
WCMC	UNEP World Conservation Monitoring Centre
WH	World Heritage
WTO	World Trade Organisation
WWF	Worldwide Fund for Nature

See also the list of institutions working in Southern Africa (Annex B)

EXECUTIVE SUMMARY

The strategy is organised into six chapters: (0) the overall aim of the EU Strategic Approach to Wildlife Conservation in Africa with some guidance on what it covers and what it omits; (1) an introduction to the wildlife of southern Africa; (2) an introduction to the main conservation threats and to the drivers of wildlife decline in the region; (3) a review of conservation approaches over the past half century in southern Africa with a subsection on the conservation of elephant and rhino; (4) lessons learnt with regard to some key conservation issues of the region (protected area management, wildlife trade, community-based natural resource management (CBNRM) and livestock disease management) and an introduction to five promising approaches to conservation (transfrontier conservation, public-private partnerships for protected area management, conservancies, awareness-raising and councils of elders for the environment); (5) a plan of indicative conservation actions to achieve long-term wildlife conservation in the region.

Chapter (0) sets out the recommended objective for the EU launch of a major new initiative in conservation: “A full suite of viable populations of the magnificent wildlife heritage throughout Sub-Saharan Africa maintained in healthy, functioning and resilient ecosystems supporting livelihoods and human development.” It should be noted that this strategy does not aim directly at the conservation of biodiversity which would include, for instance, the protection of many small areas of outstanding importance to particular taxa with restricted distribution. This wildlife strategy is intended for the conservation of large functioning ecosystems with key African wildlife populations; in this way it makes an important contribution to the wider goal of biodiversity conservation.

Chapter (1) describes the main natural habitats and ecosystems of southern Africa and the status of elephant, rhino and other large mammals in the region – which is uneven but favourable overall by comparison to other regions. It describes the miombo woodlands and forests, rivers, flooded grasslands, floodplains and other wetlands of the region and their current status.

Chapter (2) reviews long-term threats to the region’s wildlife including the rising demand for land (arising from the growth in human population), the fencing of grasslands, and the demand for ivory and rhino horn. The different threats bringing about wildlife decline are categorised as (a) *proximate drivers* – loss of habitat, illegal killing, failure of protected areas, (b) *ultimate drivers* – human population growth, international demand for resources, and climate change, and (c) *social drivers* – rural poverty, political indifference, agricultural subsidies, underfunding of protected areas. *Proximate drivers* are where much conservation work is currently focussed; *ultimate drivers* are not amenable to change; *social drivers* are difficult to change but key to the long-term future of African wildlife. One of the main social drivers is the lack of a conservation policy that is embedded in African society. This section also introduces mammal migrations and the Afro-Palaearctic bird migrations that occur in the region and their special conservation requirements.

Chapter (3) introduces seven strategic approaches to conservation that have been applied in southern Africa over the past half century or more: (1) national parks, (2) biodiversity hotspots, (3) ecoregions, (4) water basins, (5) conservation for development, (6) biosphere reserves and (7) transfrontier conservation. It illustrates each of these approaches with maps. There is no single approach which is superior to the others, rather they complement one another and each makes a contribution to conserving wildlife. This chapter goes on to look at conservation issues regarding elephants and rhinos. Southern Africa has been relatively successful at conserving these species compared to the rest of the continent but poaching is rising rapidly. The chapter concludes by discussing the pioneering role that southern Africa has played in developing novel approaches to conservation, some of which have great importance in the global conservation movement.

Chapter (4) looks at lessons learnt in five areas. (1) *Protected Areas* – protected areas have withstood the test of time and remain the single most important wildlife conservation tool. Their conservation success, however, is closely dependent on the level of financial investment in park management which is generally low. Two positive new influences on protected area conservation are the transfrontier approach and public-private partnerships in

park management. (2) *Trade in Wildlife Products* – Wildlife conservation can be assisted by its sustainable use especially in areas surrounding parks but it requires close monitoring and tight management. There is a putative link between legal and illegal trade in ivory and rhino horn that is particularly problematic. (3) *CBNRM and Conservancies* – Private and communal conservancies can bring substantial benefits to wildlife conservation and local economies if wildlife rights are devolved. (4) *Wildlife Migration and Livestock Disease Management* – Current agreements on trade in beef have proved damaging to wildlife migration. If the Commodity Based Trade approach to beef exports is sanctioned, it will enable many veterinary cordon fences in Botswana and elsewhere to be lowered. This will allow wildlife migrations to be reinstated. (5) *Networks and Conservation* – A number of networked approaches to conservation in the region, including the CAPE partnership and the Namibian Association of CBNRM Support Organisations, have proved especially successful. Other examples are found in wildlife law enforcement which is assisted by the Southern African Wildlife Enforcement Network and, with regard to rhino, by the SADC Rhino Management Group.

Chapter (4) also reviews five promising approaches to conservation in the region. The first of these is transfrontier conservation. A brief history of transfrontier conservation areas (TFCAs) is given including the important role of SADC. One of the key advantages of the transfrontier approach is the opportunity it provides to plan and undertake conservation and development at the scale of the entire ecosystem. Five tiers of management are recognised: (a) *landscape management for migration* (covering protected and non-protected parts of the landscape, and including issues such as livestock disease management) – this tier enables wildlife movement and dispersal across the ecosystem and creates the potential for old migratory routes to be re-established; (b) *landscape management for livelihoods* which enables economic growth from wildlife-based tourism and hunting within TFCAs; (c) *water basin management* which links TFCAs to River Basin Management Plans; (d) *protected areas management* which improves park management by ploughing back revenue from increased tourism; and (f) *promotion of culture and peace* which benefits from the new opportunities for cooperation and promotion of economic goods and services. The importance of governance issues in successful TFCA development is emphasized and the exceptional importance of KAZA, the Kavango Zambezi TFCA, is highlighted. The central role of SADC in developing the TFCA network is described together with the assistance afforded by its European development partners. The other four promising approaches mentioned are public-private partnerships for park management, wildlife conservancies, awareness-raising, and the formation of councils of elders for the environment.

Chapter (5) outlines a plan for achieving long-term wildlife conservation in southern Africa. The strategic plan is based on a small number of Key Landscapes for Conservation (KLCs). These areas will have the capacity to sustain viable populations of large African wildlife species within functioning ecosystems under the greatly increasing external pressure on land that is anticipated this century. At the same time, they will act as foci in developing the rural economy through sustainable use of natural resources. A suitable network of KLCs will protect the well-known wildlife species of the region and stimulate economic growth. TFCAs are a central part of this strategic approach. Those TFCAs selected as KLCs will be developed at *Site Level* with an emphasis on strengthening governance, management and awareness-raising. They will be supported at the *Country Level* with an emphasis on policy reform, institutional strengthening and awareness-raising. This will include expansion of the current national and regional facilities for mid-level and senior-level training in wildlife management. The selected TFCAs will be further supported at the *Regional Level* with an emphasis on key reforms in national laws to give landholders and rural communities the right to manage wildlife and woodlands for their own benefit. A number of Independent Conservation Areas (ICAs) that protect intact wildlife ecosystems entirely within one country will also be selected as KLCs by an expert regional panel. In support of this process, an indicative list of 20 KLCs is presented in this section. In addition to the KLC approach to conservation and the dismantling of wildlife trafficking networks, awareness-raising is prioritised. As part of the recommended awareness-raising programme, a communication strategy will furnish materials and information on wildlife conservation to a range of targeted audiences.

0 RATIONALE

The impetus for developing the strategic approach proposed in these volumes has come from the growing global awareness of a wildlife crisis in Africa. Although the much publicised plight of the African elephant and rhino has placed the issue at the forefront of international debate, conservation practitioners working on the ground in Africa have known for a long time that the wildlife crisis is by no means limited to a few iconic African wildlife species which are only the visible portion of an iceberg that hides a steady erosion of wildlife over a wide range of species in all biomes. The scale of the wildlife crisis is immense and one of the main aims of this document is to underline (a) just how much needs to be done and why, (b) what are likely to be the most realistic and effective strategic priorities for saving Africa's wildlife heritage, given the rate of human population growth and associated habitat loss. It is also hoped that the document will serve as a way of federating the different wildlife conservation actors, both within and outside Africa, around a balanced series of common themes.

One of the key points that emerges from the following is that the pressure on land and natural resources in Africa has increased conspicuously in recent decades, and is set to increase considerably more as a result of ongoing demographic and economic trends; more than ever before, Protected Areas have to be at the heart of any strategic approach to wildlife conservation as these are the areas where the most intact assemblages of Africa's wildlife are found. A second key point is that African people living in wildlife-rich areas need to have tangible benefits in the preservation of Africa's wildlife if they are (a) to accept the costs of living with it and (b) be able to continue using it sustainably. Thirdly, efforts to tackle the international illegal trade require concerted actions to stop the killing, stop the trafficking and stop the demand for wildlife and forest products. Fourthly, good quality and up-to-date information is essential in order to inform the choice of strategic options and monitor outcomes. Lastly, all of the above will require a whole raft of institutional, policy and legal improvements or changes to occur in parallel.

Combining the above considerations brings us to an overall objective, or desired outcome, for the strategic approach to wildlife conservation:

A full suite of viable populations of the unique wildlife heritage of Sub-Saharan Africa maintained in healthy, functioning and resilient ecosystems supporting livelihoods and human development.

Thus the strategic approach developed herein is primarily targeted at the conservation of large functioning ecosystems or landscapes supporting key African wildlife populations. It contributes to wider goals of biodiversity conservation by, for example, protecting many small areas of outstanding importance to particular threatened taxa where those small areas fall within larger conservation landscapes. A secondary tactic supporting wider biodiversity goals is to make conservation funds available to agencies and projects protecting small important sites that cannot be contained in the large key landscapes identified.

The Strategic Approach to Wildlife Conservation in Africa is presented in six volumes as follows:

- Volume 1: Synopsis**
- Volume 2: Southern Africa**
- Volume 3: Eastern Africa**
- Volume 4: Central Africa**
- Volume 5: Western Africa**
- Volume 6: Additional Sections – Elephants, Rhinos, Trade, Madagascar, Birds, Other Wildlife**

The first five volumes are each arranged according to six chapters (following an Executive Summary): 0. Rationale; 1. Special Features of the Region; 2. Conservation Challenges and Issues; 3. Ongoing Conservation Efforts; 4. Lessons Learnt and Promising Approaches; and 5. Indicative Conservation Actions. A somewhat different format

is found in Volume 6 which begins with three chapters (Elephants, Rhinos, Trade) that relate to the wildlife crises currently affecting elephants, rhinos, numerous 'bushmeat' species including many rare forest specialist species, and various plants and trees that have market value. These three chapters contain relevant background information and strategic approaches aimed at stopping the killing, the trafficking and the demand. There is a separate chapter on Madagascar because of its unique conservation status and geographic isolation. A fifth chapter introduces priorities for bird conservation, highlighting the coordinated conservation of European-African bird migrations. An annex provides additional information on various other wildlife groups (including fish, amphibians, insects, large carnivores and great apes) that warrant special mention.

We recognise that the wildlife crisis is not confined to the terrestrial environment and that marine ecosystems are also critically impacted by unsustainable harvesting. Furthermore, we are aware that issues relating to the impoverishment of the marine environment are as far reaching as those of the terrestrial environment. A separate, but linked, strategic approach is therefore required for marine ecosystems. Similarly a separate but linked strategic approach may be required for conservation of freshwater ecosystems which recognizes unique elements of the aquatic fauna. Some freshwater ecosystems are incorporated into this strategy, particularly those wetlands that have importance for water birds, or as terrestrial ecosystems in their own right (such as Okavango Delta, swamp forest areas in Central Africa, Rift Valley Lakes, the Sudd, Lake Chad, Senegal Delta and Inner Niger Delta), or have exceptional importance for biodiversity (Lakes Malawi and Tanganyika for example).

The European Union wishes to assist in building an inclusive strategic approach to the conservation of African wildlife that involves all political and organisational stakeholders working for the benefit of Africa, its wildlife heritage and its peoples. This document may be viewed as a first step in the process of building a consensus, after which the various strategic elements proposed will need to be translated into action through a series of programmes and projects for which detailed results and indicators will have to be developed and rigorous performance monitoring and accountability measures applied. Through cooperation we trust that the long-term future of African wildlife can be secured and that this will be done in such a way as to provide greatest benefits to the nations and peoples of Africa, and not least to the local people who live alongside and within some of the most spectacular wild ecosystems on the planet. The natural heritage of Africa greatly enriches the global natural heritage and we hope this strategic approach to its conservation will encourage others to adopt compatible strategic approaches in other regions.

1 SPECIAL FEATURES OF THE SOUTHERN REGION

The strategic approach to wildlife conservation in Southern Africa covers ten countries all of which are member states of SADC. They are Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe. A strategy for Madagascar has been prepared separately (Volume 6). The Southern African strategic approach provides appropriate responses to counter immediate threats to wildlife. It also presents a guide to the long-term conservation of wildlife in the region which is founded on two overarching principles – *ecosystem conservation* and *sustainable use of natural resources*. ‘Ecosystem conservation’ recognises the need for ecosystem-scale conservation in order to conserve viable populations of the larger wildlife species over the long term. This has particular cogency because of the regional trend towards increasing isolation of the remaining areas of natural habitat. Ecosystem-scale conservation is also needed to protect the ecological processes, such as migration and ecological succession, which underscore dynamic African wildlife areas. Regarding natural resources, the natural capital inherent within functioning ecosystems is crucial to the economic growth of surrounding communities. This strategy seeks to integrate ‘sustainable use of natural resources’ with ecosystem conservation to provide synergy between wildlife conservation and rural development. The strategic approach outlines a process for delivering effective land-use planning to meet these objectives through partnerships between communities, the private sector and government.

1.1 CONSERVATION FEATURES OF SOUTHERN AFRICA

Southern Africa has great regional diversity in climate, geomorphology and biodiversity (Figure 1). For the most part its conservation issues transcend national boundaries, however, the region does have some notable endemic species with restricted ranges (Box 1). Fynbos shrubland forms a major element of the Cape Floristic Region which is one of the six recognised floral kingdoms of the world with some 9000 vascular plant species of which 69% are endemic to South Africa. Another centre of endemism is the Namib Desert which has been arid for 55 million years, and is considered to be the oldest desert in the world. It extends along the coast of Namibia merging with the Kaokoveld Desert in Angola and the Karoo Desert in South Africa which has the world’s richest flora of succulent plants. The eastern coast of southern Africa below the Great Escarpment is another important centre of plant endemism. Lake Malawi is a further site well-known for its high endemism of fish and molluscs.

Southern Africa has enormous areas of dry Miombo woodland lying north of the Limpopo River which have outstanding importance for conservation. The woodlands are occupied by some of the larger mammals of Africa such as elephant, black rhinoceros, hippo, giraffe, buffalo and zebra, which can utilise the fibrous plant material

Box 1. Southern Africa Conservation in a Nutshell¹

Southern Africa Conservation in a Nutshell

- Wealthiest and most developed region of Sub-Saharan Africa
- Lowland rainforest in Madagascar
- Ancient coastal desert – the Namib – which may be the oldest desert in the world
- Cape Floristic Region – one of 6 floral kingdoms of the world
- Many regional endemics
- Large areas of intact dry forest and savanna
- More elephants than the rest of Africa together
- More rhino than the rest of Africa together
- 14.8% of land protected (SADC 2006)
- Many parks severely underfunded
- Land under pressure from expanding rural population

¹ References located within boxes can be found in Annex A

found on the nutrient-poor soils. Due to the vast size of the ecoregion, its overall importance for such species is very high even although animal densities are usually low. Consequently about half the elephants and half of the rhinos left in Africa are found there. Seasonal movements of these animals take advantage of temporal and spatial variability in surface water and plant nutrients. Consequently, migration and seasonal dispersal of large mammals are characteristics features of the Miombo.



Figure 1. Physical features of Southern Africa based on imagery collected by NASA's MODIS satellite in February 2004 during the rainy season

The Okavango Delta is visible towards the middle of the image and in the centre of the subcontinent. Its fingers point southeast towards the pale patch of Makgadikgadi and neighbouring pans. Etosha Pan further west is shown in dark blue possibly indicating heavy rain immediately preceding the MODIS scan. Further west still is the coastal Namib Desert. North of the Okavango Delta, a narrow green belt running north to south is the Barotse Floodplain of the Zambezi River. Further northeast and lying to the west of the south end of Lake Tanganyika is the small marshy Lake Mweru Wantipa and west again the larger Lake Mweru which drains to the Atlantic Ocean via the Congo River. Further east is the long finger of Lake Malawi which drains through the Shire and Zambezi Rivers to the Indian Ocean. In the southeast of the region, the Maloti-Drakensberg Mountains are visible in the centre of a semicircle of mountain ranges roughly paralleling South Africa's coastline. The humid forests of Madagascar's east coast show up clearly as a belt of green.

1.2 STATUS OF WILDLIFE IN SOUTHERN AFRICA

1.2.1 Large mammals

The overall trend in Africa is for a decline in the number of animals not only outside PAs but also inside them. This has not been adequately studied but reflects a combination of encroachment, illegal hunting and the reduction in availability of suitable habitat surrounding PAs from human settlement and development. The latter may be especially significant where former dry season refuges or wet season dispersal zones are entirely removed.

Nevertheless, the assembly of large mammal species in southern Africa is spectacular. For example, the region supports between 200 000 to 250 000 elephants whilst leopard, buffalo, kudu, zebra and other antelopes also occur in large numbers. Although cheetah and rhino are present in relatively small numbers, nevertheless the region has a high proportion of the world's population of both species. A comparison of trends in three regions shows the relative success of conservation in southern Africa (Figure 2).

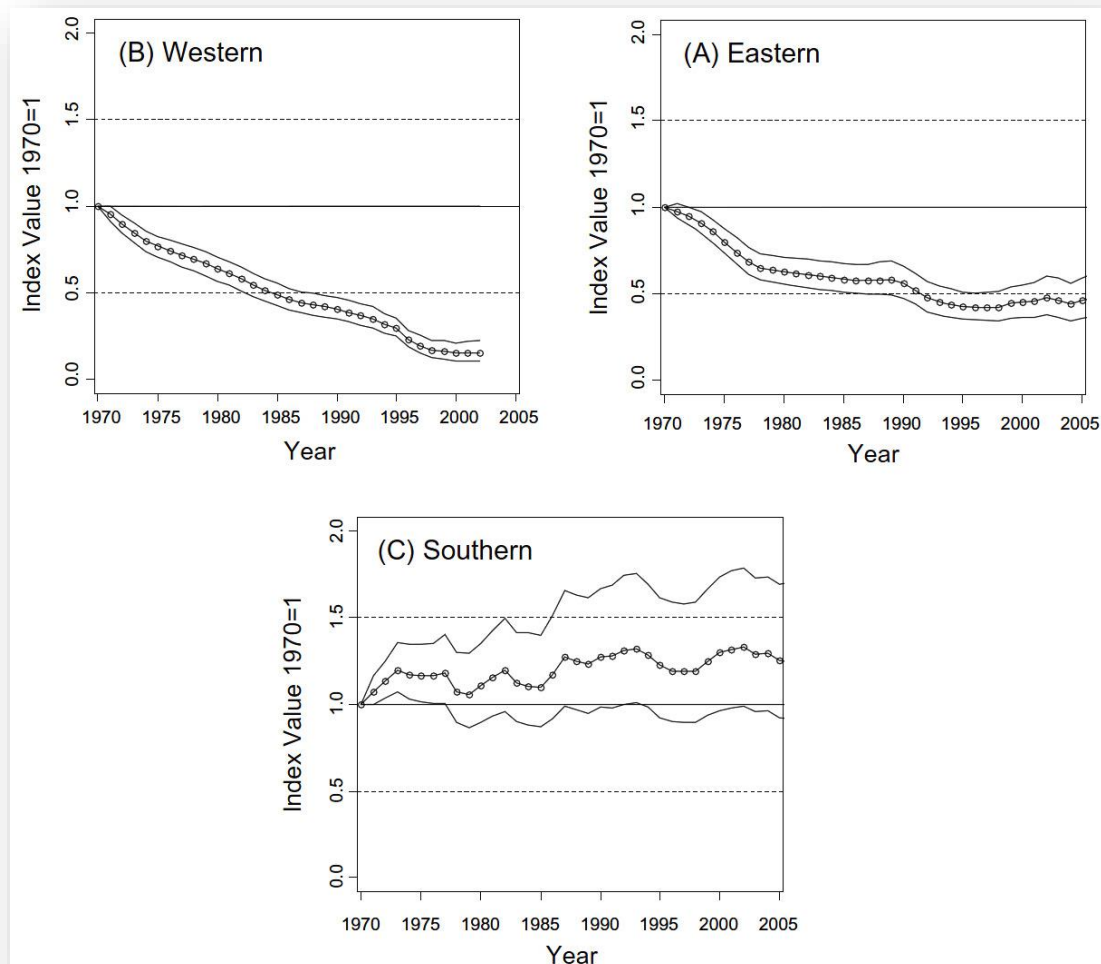


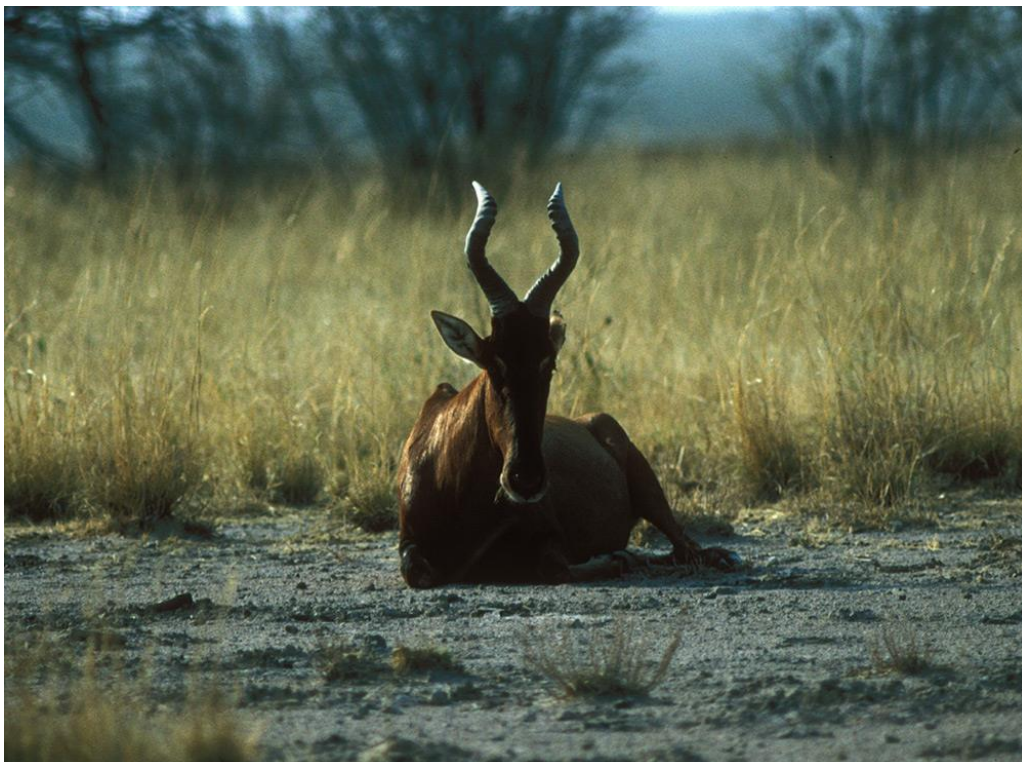
Figure 2. Indices for population abundance of 69 species of large mammal within 78 protected areas: A, eastern Africa; B, western Africa and C, southern Africa².

As can be seen, the only region of Africa showing population increases of wildlife is in the south. Partly this is due to the expansion of protection to new areas such as in southeast Angola where elephant numbers increased rapidly in the early 2000s and expanded their range into reserves lying on the northern boundary of the Caprivi Strip³. Also protected areas have tended to be relatively well funded in southern Africa and are often managed specifically for their large mammals, and primarily for tourism. It is apparent that PAs in Africa are successful in maintaining large mammal populations if the management is appropriate and has sufficient resources. Conversely, western African

² Craigie, I.D. et al. 2010. Large mammal population declines in Africa's protected areas. *Biological Conservation* 143: 2221-2228.

³ Chase, M.J & Griffin, C.R. (2011). Elephants of south-east Angola in war and peace: their decline, re-colonization and recent status. *African Journal of Ecology*, 49(3), 353-361.

PAs which show the greatest population declines in this study have less financial and personnel resources available and their large mammals are threatened by hunting for bushmeat.



Above: Territorial blue wildebeest pawing ground. Below: Khama (red) hartebeest. Both photos in Etosha National Park, Namibia © Martyn Murray

A number of charismatic wild animals are threatened or endangered in the southern region. The proportion of threatened wild mammal species ranges from 2.6% in Zimbabwe to 13% in South Africa. However, the figures are on the increase in the region as a whole. In terms of species extinction, the blue antelope and the quagga are the only mammalian species known to have become extinct in southern Africa in recent times. On the other hand, species such as the white and black rhino, black wildebeest, crowned crane, velvet gecko and the cape mountain zebra have come critically close to disappearing altogether. Decisive conservation action has allowed their populations to recover, but increasing poaching of rhino places both species at risk once again. Figure 3 shows the trend in estimated numbers of both rhino species in the wild since 1992 and Table 1 gives the final continental rhino number estimates by country and subspecies for Africa (as of 31 December 2012).

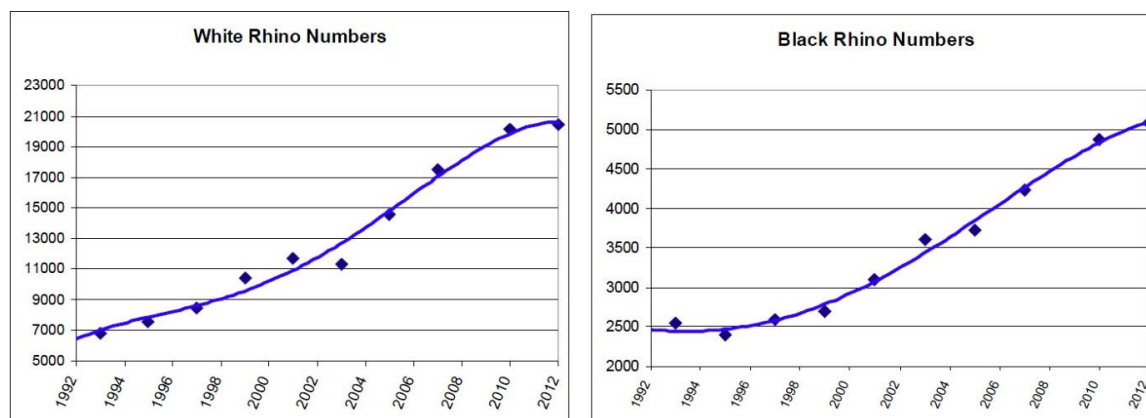


Figure 3. White Rhino and Black Rhino population trends 1991-2012 with fitted polynomial trend line Source: IUCN SSC AfRSG data.

Table 1. Numbers of white and black rhinos in Africa as of 31 Dec 2012 by country and subspecies

Species	White Rhino <i>Ceratotherium simum</i> (WR)			Black Rhino <i>Diceros bicornis</i> (BR)			
Subspecies	C.s.cottoni	C.s.simum	Total WR	D.b.bicornis	D.b.michaeli	D.b.minor	Total BR
	Northern	Southern		SouthWestern	Eastern	SouthCentral	
Angola				1			1
Botswana		185	185			9	9
Malawi						26	26
Mozambique		1?	1?			0?	0
Namibia		524	524	1,750			1,750
South Africa		18,933	18,933	208	68	1,792	2,068
Swaziland		84	84			18	18
Zambia		10	10			27	27
Zimbabwe		284	284			424	424
S. Sub-region		20,021	20,021	1,959	68	2,296	4,323
Kenya	4	390	394		631		631
Tanzania					100	27	127
Uganda		14	14				
E. Sub-region	4	404	408	0	731	27	758
ALL	4	20,425	20,429	1,959	799	2,323	5,081

Source: AfRSG

African wild dogs are also endangered in the region, surviving only in large protected areas. Similarly, the bearded vulture has undergone serious population declines and is now restricted to the Drakensberg range of South Africa and Lesotho.

Most extant antelope species in Southern and South-central Africa still occur in substantial populations, at least locally. However certain subspecies, including giant sable (*Hippotragus niger* ssp. *variani*), are at danger of extinction in the region⁴. The long-term persistence of these species within the region will require effective conservation of the ecosystems in which they occur. Conservation areas within southern Africa of outstanding international importance for the conservation of antelope communities are listed by East⁵. The most appropriate and feasible strategy for antelope conservation will depend on local circumstances but in general it will combine strict protection of core conservation areas with consumptive and non-consumptive utilisation of antelopes by rural populations as both play important roles in the development of successful long-term conservation strategies in southern Africa.

1.2.2 Forests and Woodlands

1.2.2.1 Overview

Forests and woodlands of Southern Africa cover some 39% of the total land area. This ranges from 0.5% in Lesotho to 56% in Angola. Much of the rest of the region contains savanna, arid or semi-arid scrub (Figure 4). The forest and woodland types in the region can be summarized as follows.

i) *Tropical forests*. These are found in parts of Angola and the Congo basin. They harbour a diverse assemblage of plants and animals with about 400 mammal species, more than 1 000 bird species and over 10 000 plant species of which some 3 000 are endemic to the region.

ii) *Afromontane forests*. They are found in the high altitude and high rainfall areas of Malawi, Mozambique, Tanzania, Zambia, Zimbabwe and South Africa. The tree species, that include Podocarpus, are similar to those found in tropical rainforests. However, one of the few differences with the latter is the occurrence of tree ferns and conifers.

iii) *Mangrove forests*. These are found along the coastline of Mozambique and Angola and the north east coast of South Africa. Tanzania, Namibia and Mauritius also have some Mangrove forests. These forests play a very important protective function to the coastline and are also key ecosystems for the breeding of marine fisheries.

iv) *Zambezi teak forests*. They are sometimes called the “Kalahari forests”. They occur in parts of Zimbabwe, Zambia, Botswana, Namibia and Angola. The dominant tree species is *Baikaea plurijuga*. This forest type has a long history of management for commercial timber exploitation, wildlife utilization, cattle grazing and water catchment.

v) *Miombo woodlands*. They are the most extensive woody vegetation type in areas north of the Limpopo river. Dominant tree species are Brachystegia, Julbenardia and Isoberlinia. Thickets of miombo hold little merchantable timber using current technologies and market preferences. Miombo covers an estimated 3.6 million square kilometres in central and southern Africa. These “miombo” savanna woodlands are found in parts of eleven countries (Angola, Botswana, Democratic Republic of Congo, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe). Some of the woodlands, especially in Zimbabwe, Malawi and Tanzania, have been converted into intensive agricultural areas.

⁴ East R. 1989a. Chapter 13: Summary of Regional Status of Antelopes in Southern and South-Central Africa. In: Antelopes Global Survey and Regional Action Plans, Part 2. Southern and South-Central Africa. pp 76-79. IUCN SSC Antelope Specialist Group. See also IUCN Red List 2014.

⁵ East R. 1989b. Chapter 14: R. Status of Antelope Communities and Identification of Regional Conservation Priorities. In: Antelopes Global Survey and Regional Action Plans, Part 2. Southern and South-Central Africa. pp 80-86. IUCN SSC Antelope Specialist Group.

vi) *Mopane woodlands*. They are found in the drier and lower lying parts of Zimbabwe, Zambia, Namibia, Angola, Botswana, South Africa, Mozambique and Malawi. Where *Colophospermum mopane* is dominant, the woodland assumes economic importance especially as a source of browse for both domestic and wild animals. In addition, the tree's coppicing abilities render the woodlands economically important for subsistence wood fuel, construction poles and mopane worms.

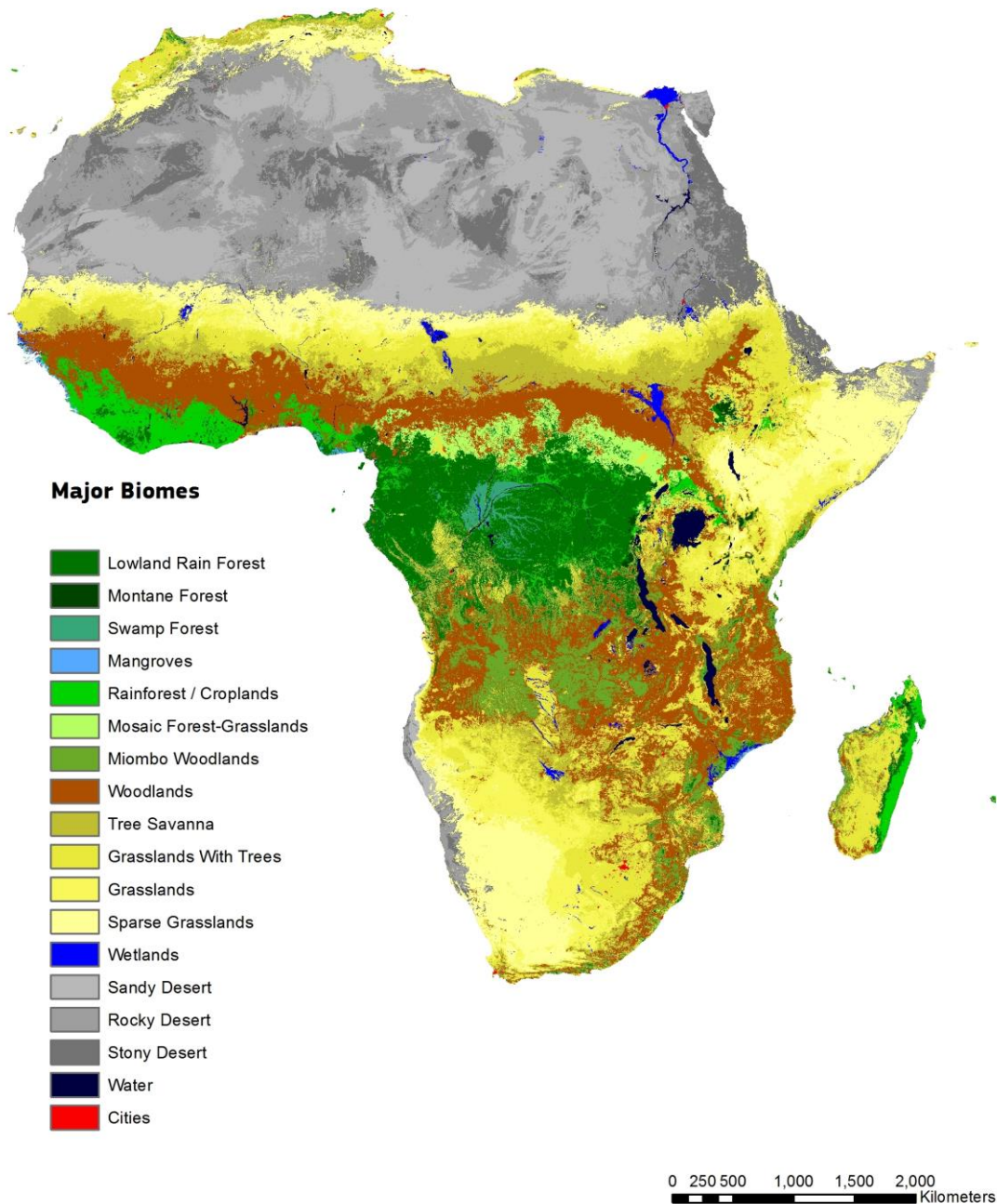


Figure 4. Map of the major ecotypes of Southern Africa

1.2.2.2 Miombo

Miombo woodlands are the most extensive woody vegetation type of southern Africa covering over 3.8 million km² in 11 countries – Angola, Botswana, Burundi, Democratic Republic of Congo, Malawi, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe. The ecoregion is divided into six vegetation types as shown in Figure 4: Wet miombo woodland, Dry miombo woodland, *Burkea - Terminalia* open woodland, *Baikiaea* woodland, Mopane woodland/shrubland and *Acacia - Combretum* woodland. In general there is a shift towards wet miombo types as one goes northwards.

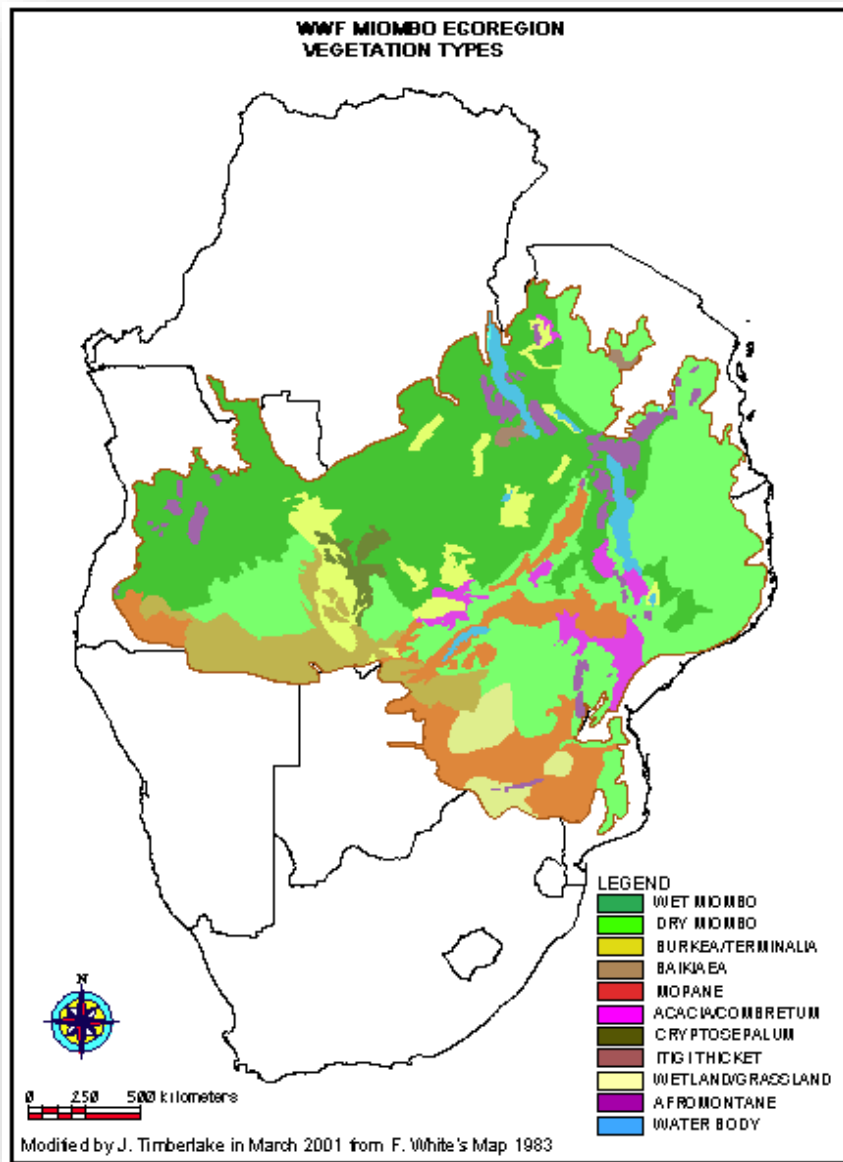


Figure 5. Distribution of miombo woodlands in southern Africa

The human population density over much of the ecoregion is still low and patchy in comparison with other savanna regions of Africa under similar climatic conditions, although the situation is changing. The density of livestock is also relatively low, particularly in wetter areas where tsetse fly and trypanosomiasis remain prevalent. The ecoregion is important for the abundance of woodland products: wood for building, fuel wood, fibre and forest foods such as bushmeat, fungi, honey and edible insects.

The Miombo Ecoregion is of outstanding importance to conservation. It incorporates the catchment basins for the main rivers of southern Africa including the Zambezi, Kavango and Congo, also for two of the African Great Lakes (Lake Malawi/Niassa and Lake Tanganyika), and the Okavango Delta. Miombo woodlands are occupied by some of the most charismatic larger mammals of Africa such as elephant, black rhinoceros, hippo, giraffe, buffalo and zebra, which can utilise the fibrous plant material found on the nutrient-poor soils. Due to the vast size of the ecoregion, its overall importance for such species is very high even although animal densities are usually low. Consequently about half the elephants and half of the rhinos left in Africa are found there. The vast size of the region brings its own conservation challenges as it crosses national boundaries of 11 countries each with their own peculiarities of policy and legislation. The birdlife in the ecoregion is particularly rich in species although the rates of endemism are low. On the other hand, the isolation of Lake Malawi and Lake Tanganyika has given rise to great diversification of freshwater fish and mollusc with many endemics.

Between 1990 and 2000, the region's indigenous forests were being lost at an average rate of 0.6% per annum. The figure ranged from 0.1% in South Africa to 2.2% in Malawi (Table 2).

Table 2. Forest cover loss in southern Africa: 1990-2000

Country	Forest cover in 1990 (000ha)	Forest cover in 2000 (000ha)	Annual change (%)
Angola	70 998	69 756	-0.2
Botswana	13 611	12 427	-0.9
DRC	140 531	135 207	-0.4
Lesotho	14	14	NS
Malawi	3 269	2 562	-2.2
Mozambique	31 238	30 601	-0.2
Namibia	8 774	8 040	-0.8
South Africa	8 997	8 917	-0.1
Swaziland	464	522	+1.3
Tanzania	39 724	38 811	-0.2
Zambia	39 755	31 246	-2.1
Zimbabwe	22 239	19 040	-1.4
Total	379 614	357 143	-0.6

Source: FAO (2001).

Three features of the miombo should be born in mind when considering conservation strategy. Firstly, a key challenge of the ecoregion is to conserve the large-mammal populations with their distinctive seasonal movements and migrations. Conserving elephants with their requirement for space, potential for human-wildlife conflict, capacity for causing woodland-habitat change, and attraction for ivory poachers, is perhaps the greatest challenge of all.

Secondly, miombo is a "high-carbon" landscape, with an abundance of woody biomass. This applies even more to the wet miombo which has higher density of woody biomass and correspondingly greater capacity to store carbon than dry miombo. This presents opportunities for conserving areas of wet miombo for carbon storage.

Thirdly, the miombo woodlands cover most of the headwaters in the ecoregion where deep deposits of Kalahari Sands play a storage role by slow release of water. Flooded grasslands, swamps and dambos within the miombo have a similar hydrological role. These water retention features create long-distance linkages by feeding water to downstream areas long into the dry season. Conservation of wet miombo areas can serve the dual ecological functions of watershed protection and carbon storage, with significant regional and global benefits. It also protects the albedo effects of extensive woodland canopy cover, which maintains the regional climate.

1.2.3 Wetlands and Rivers

1.2.3.1 Flooded Grasslands



Photo Roger Brown <<http://artofthewildrogerbrown.blogspot.co.uk/2012/10/flying-around-okavango-delta.html>>

The Okavango Delta of Botswana

The flooded grasslands are a uniquely important habitat for conservation in southern Africa which provides food and water for wildlife throughout the year. Embedded mostly within the miombo and mopane woodlands of the Central African Plateau, Zambezian flooded grasslands are recognised as an ecoregion with a discontinuous distribution between northern Botswana and northern Tanzania (Figure 6). Large populations of waterbirds gather at these wetlands during the rainy season whilst numerous herd animals utilise the habitat in dry months when it can form a focus for species undergoing long-distance migrations. The population of Red lechwe exceeds 20,000 in Moremi Game Reserve, Botswana and that of Kafue lechwe exceeds 35,000 in Lochinvar National Park, Zambia. The largest remaining population of puku is found in the Kilombero Valley in Tanzania and more than 20,000 Cape buffalo occur in the Moyowosi delta of northwestern Tanzania. Many of the ungulates that inhabit this ecoregion move seasonally through the floodplain in response to the fluctuating water levels. Tsessebe, which are mostly restricted to seasonally flooded grasslands, are known to follow the receding waters in the dry season and to retreat to higher ground when the waters rise. Wildebeest and oribi also frequent extensive floodplains and grasslands, although the latter favor less waterlogged areas such as termitaries, where herbs and woody growth provide food and cover. Waterbuck, puku, southern reedbuck, and sitatunga are also common inhabitants of the floodplains, although these species tend to prefer the reed beds or more wooded vegetation on the margins of the floodplains. Greater kudu, hartebeest, steenbok, sable and roan antelope are found in fewer numbers, generally preferring the woodland margins of inundated grasslands. Other herbivores attracted to these pastures include elephant, Burchell's zebra and eland. Hippopotamus is found in almost all of the prominent floodplains.



Figure 6. Distribution of Zambebian flooded grasslands⁶

The more extensive floodplains have historically provided important habitat for humans. For example, the Lozi people have traditionally occupied the Barotse floodplains and their livelihoods have been closely linked to the seasonal flooding of the area. The Kafue Flats have been used by the Tonga people for cattle rearing and limited cultivation. However, much of the area comprising this ecoregion falls into areas affected by tsetse flies, vectors of sleeping sickness or trypanosomiasis, which affects both livestock and humans. This factor, in combination with the fact that many of the wetlands are at least afforded partial protection, may explain the relatively low overall human populations in these floodplain regions during the recent past.

In recent years this picture has been changing. Several areas that only used to be seasonally grazed are now permanently occupied and cultivated. Increased wealth and government/aid inputs, as well as extensive tsetse fly control have contributed to a large increase in cattle numbers over the past few decades; as many as 250,000 head of cattle are said to graze only in the Kafue Flats. Other threats arise from repetitive fires, pollution and illegal hunting. Although many of these floodplains are officially protected, ineffective management and lack of funds has resulted in uncontrolled poaching of animals such as hippo, elephant, and rhino. In addition, overfishing is becoming an issue of increasing concern.

1.2.3.2 Rivers

The major rivers of Southern Africa include the Zambezi, Save, Limpopo, Orange, Cunene (Kunene), Cubango (Okavango) and Cuanza. By far the greatest river system in southern Africa is the Zambezi which rises in northwestern Zambia on the Central African Plateau, flows south initially and then eastwards for 1600 km across half the continent before draining into the Indian Ocean, north of Beira in Mozambique. The basin, 1.33 million km² in extent, incorporates four distinct biomes and drains parts of eight countries (Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe). The basin has abundant water, fertile land and soils for agriculture and diverse habitats that are home to large populations of wildlife.

⁶ WWF 2013. Zambebian flooded grasslands. <<http://www.eoearth.org/view/article/157211/>>

There are four globally significant areas of biodiversity interest situated within the Zambezi Basin⁷. These are (a) Lake Malawi with its radiation of fish groups and freshwater molluscs; (b) the swamps, floodplains and woodlands of the Upper Zambezi in Zambia and northern Botswana with their radiation of reedbuck antelope (black lechwe, Kafue lechwe, red lechwe, extinct Robert's lechwe and puku); (c) the Middle Zambezi Valley with its world-renowned assemblage of large African mammals including elephant, buffalo, giraffe, lion and until recently rhino; and (d) the area incorporating Gorongosa, Cheringoma and the Zambezi Delta in central Mozambique with its diverse habitats.

In terms of threats, the construction of dams has had probably the greatest effect on biodiversity of wetland and aquatic species and on wetland ecological processes. These include large dams, such as Kariba, Cabora Bassa, Itzhi-Tezhi and Kafue Gorge, and the myriad of small dams on almost all tributaries of the Zambezi in Zimbabwe. Hydrology is changed, flooding regimes greatly modified, and hence habitat and species composition. Two new major habitats have been created – a pelagic (open water) environment and a littoral (shoreline) environment. Creation of these new environments has led to previously rare species (e.g. freshwater molluscs) becoming abundant, and to the invasion or introduction of species new to the basin.

2 CONSERVATION CHALLENGES AND ISSUES

2.1 DEMAND FOR LAND

2.1.1 Subsistence Farming

By far the greatest challenge for wildlife conservation in Africa over the course of this century will arise from the projected growth in the human population (Table 3). The population in the region is projected to treble or quadruple over the course of this century which will place great demands on natural resources. A particular issue will be the amount of land turned over to arable production. The growth of arable land in Sub-Saharan Africa from 2000-2030 is projected to rise by 26%⁸. The question arises as to whether protected areas can be sustained under greatly increasing pressure for arable land. In 2011, protected areas in Sub-Saharan Africa comprised 11.8% of surface area⁹. Much of this area is suitable for agriculture and livestock.

⁷ Timberlake, J. 2000. Biodiversity of the Zambezi Basin. Occasional Publications in Biodiversity (Biodiversity Foundation for Africa) No. 9.

⁸ FAO (2003) World Agriculture: Towards 2015/2030. Earthscan.

⁹ IUCN and UNEP-WCMC (2011). The World Database on Protected Areas.

Table 3. Human Population Trends in Southern Africa

Population Size (millions)¹

	2013	2050	2100
Angola	21	54	97
Botswana	2	3	3
Lesotho	2	3	3
Madagascar	23	55	105
Malawi	16	41	85
Mozambique	26	60	112
Namibia	2	4	4
South Africa	53	63	64
Swaziland	1	2	2
Tanzania	49	129	276
Zambia	15	44	124
Zimbabwe	14	26	33
Southern Africa²	152	300	527
Southern Africa ³	224	484	908
Africa	1.111	2 393	4.185

¹Medium variant projection; in: World Population Prospects, The 2012 Revision, UN, NY (2013).

²Excluding Madagascar and Tanzania

³Including Madagascar and Tanzania

Figure 7 illustrates how rapidly protected areas can become isolated by human settlements. In this case the main change precipitating immigration was clearance of tsetse fly. Up to 1993, the protected areas had remained free of settlement.

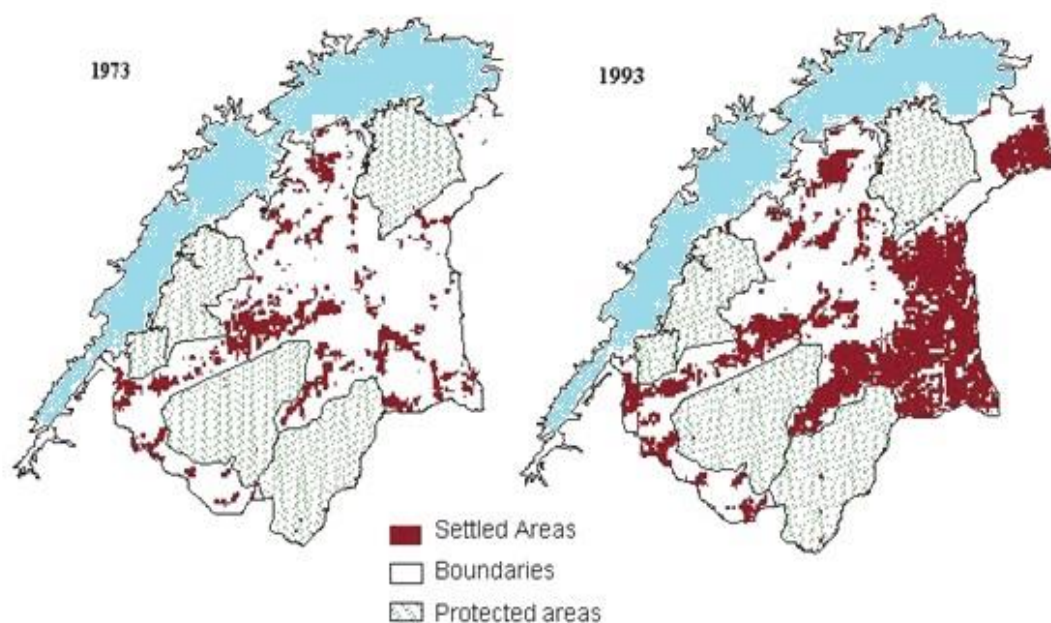


Figure 7. Growth of rural settlement south of Lake Kariba¹⁰ (Cumming 2008)

¹⁰ Cumming, D.H.M. 2008. Large Scale Conservation Planning and Priorities for the Kavango-Zambezi Transfrontier Conservation Area. A report prepared for Conservation International.

However, protected areas in Africa do succumb to population pressure like this, experiencing extensive cattle grazing, farmed agriculture and settlement, unless they have central importance in socio-economic development plans for the region.

2.1.2 Commercial Farming

Plantations and commercial farms have significant direct and indirect effects on biodiversity. Oil palm is one of the most rapidly expanding plantation crops which is having high impacts on moist forest habitat in Central Africa (Vol. 4). Commercial farming of sugarcane can reduce downstream water supplies and displace wildlife directly. It has completely transformed large tracts of land, especially in the coastal regions north and south of Durban. Other export crops including vegetables and flowers have similar impacts. Pressure from commercial agriculture will work in tandem with that from subsistence agriculture to place increasing pressure on wildlife over the course of this century.

2.2 ALIENATION OF THE MAJORITY POPULATION

In southern Africa, a sense of the intrinsic values of biodiversity is poorly developed at the level of decision making on land use, and there is almost no consideration given to ecosystem services and biodiversity (DHM Cumming, pers. comm.). By many measures, protected areas are underfunded. This situation has been aptly summarised by the African Parks organisation¹¹: *'State conservation agencies have become seriously underfunded, management expertise has been lost and proper governance eroded. Coupled with this is the increasing pressure from growing populations in surrounding communities. With little or no legitimate benefit from a park's existence, local communities face a set of economic incentives that can only lead to its destruction over time.'* The scale of underinvestment in the protected areas of southern Africa is highlighted in Section 2.2.2.3 (*Investment in Protected Areas*).

The situation at the local level is no better as the parks are often disliked. In the words of Hulme and Murphree¹²:

For generations, conservation policy in Africa has been socially illegitimate in the eyes of the continent's rural people... the task of creating a conservation policy that is embedded in Africa society, rather than imposed from above, will be the work of generations.

If pressure on land is the ultimate driver of wildlife decline then alienation of the majority population from its wildlife heritage is the ultimate social driver (Table 4, Section 2.6). The birth of community management of natural resources is creating opportunities for a new conservation policy that is embedded in African society. It is a central pillar of this wildlife strategy (Section 5).

2.3 FENCES AND HABITAT FRAGMENTATION

When habitat is lost, protected areas are increasingly isolated (Section 2.1). Other factors contributing to this isolation are longitudinal barriers, principally fences and roads, and the elimination of wildlife in surrounding territory through overhunting and disease. Isolation of protected areas poses a serious threat to the long-term viability of many wildlife populations and migrations in Africa^{13,14}. A major proximate cause of wildlife decline has been the fragmentation of habitat caused by the erection of game fences across large parts of southern Africa, as illustrated

¹¹ <http://www.african-parks.org/About+Us.html>

¹² Hulme, D. and Murphree, M. (Eds) 2001. *African Wildlife and Livelihoods – The Promise and Performance of Community Conservation*. James Currey Ltd, Oxford.

¹³ Newmark, W.D. 2008. Isolation of African protected areas. *Frontiers in Ecology and the Environment* 6: 321–328.

¹⁴ Ferguson & Hanks (2010) *Fencing Impacts*. K Ferguson and J. Hanks (eds). Mammal Research Institute, University of Pretoria.

for central Namibia in Figure 8. Such ‘fencescapes’ are increasingly found elsewhere including South Africa and Botswana. This situation has been seriously aggravated by the beef subsidies offered under Lomé Conventions and the Cotonou Agreement that have led to extensive fencing, habitat fragmentation and collapse of migratory wildlife populations (Box 2).



Figure 8. Fences in central Namibia; note Tswanaland rectangle in Kalahari¹⁵

Box 2. Fences, Migration and Livestock Diseases¹⁶

Historically many ungulate migrations in southern Africa occurred in Botswana. The largest existed around the Kalahari Desert, with water-dependent species spending the dry season around rivers and lakes before moving to seasonal desert grasslands once rain had filled temporary waterholes and initiated the growth of annual grasses (Williamson et al., 1988). Millions of wildebeest, hartebeest and springbok moved from the central Kalahari Desert to the schwelle grassland in south-west Botswana (Williamson et al., 1988) and hundreds of thousands of wildebeest and zebra moved from the Boteti River to the Kalahari and Makgadikgadi grasslands. Further north, buffalo, elephant, wildebeest and zebra moved from the permanent waters of the Okavango and Linyanti river systems to the seasonal grasslands of the Savuti marsh (Vandewalle, 2000).

The control of Foot and Mouth Disease in Botswana, Namibia, South Africa and Zimbabwe led to the erection of fences across vast areas to control movements of game and cattle which markedly reduced the sustainable densities of wildlife (Booth & Cumming 2009). Between the 1950s and 1980s, Botswana erected veterinary cordon fences across much of the country, especially to protect cattle destined for European export (EIA 2008). Many migratory movements were disrupted. The “mass die-offs” and resultant population declines of wildebeest, zebra and other large mammals are well known (Williamson & Williamson, 1981, 1988; Williamson, et al., 1988). Disruptions of migratory routes, habitat fragmentation and mortalities on fences continue to be a source of concern and controversy (Gibson 2010). However, recent studies reveal that historical migrations can be reinstated once barriers to movement are removed (Bartlam Brooks et al 2011).

Despite these control measures and their environmental costs, access to European markets for livestock and livestock products in the region continues to be constrained by Foot and Mouth Disease (Thomson et al 2013a). As a consequence, southern Africa faces ongoing losses of biodiversity as well as limited access to high-value markets for animal products. There is a new willingness in the conservation and livestock sectors of southern Africa to look again at the issue of veterinary cordon fencing and to seek environmentally sensitive alternatives for controlling disease (Section 3.4).

References may be found in Annex A.

¹⁵ Eckardt unpubl. Photograph in: Perkins, J. (2010). Fences and landscape scale degradation. In: Ferguson & Hanks (2010) Fencing Impacts. K Ferguson and J. Hanks (eds). MRI, University of Pretoria.

¹⁶ References within boxes are given in Annex A.

2.4 DEMAND FOR IVORY

In southern Africa, the main concern with ivory poaching is in Mozambique where the combined elephant population in the Selous-Niassa Ecosystem lost an estimated 7,000 elephants in the period between the 2009 to 2011 surveys. Increased poaching is also recorded in Angola, South Africa, Zambia and Zimbabwe but not so far at the levels reported in Central Africa. PIKE data indicate that Caprivi, Namibia may also be experiencing problems. Zambia is facing serious challenges from an illicit trade in ivory.

Despite the rise of poaching in the region, a major elephant-related concern in southern Africa is the growing population of elephants in KAZA TFCA and its impact on woodlands. The central issue there, and across the region, is the extent to which local communities can realise the full value of wildlife on their land, and whether those benefits will outweigh the costs of having wildlife on their land. This in turn highlights the importance of successfully integrated development planning in the context of TFCAs.

2.5 DEMAND FOR RHINO HORN

South Africa conserves 82% of Africa's rhinos and it also has experienced the most poaching in absolute terms since 2009. In 2012 South Africa lost 3.19% of its national herd from poaching putting it on a par with Kenya (2.83%) and Zimbabwe (4.11%). While poaching in SA and Kenya is currently still at sustainable levels (i.e. not currently leading to population decline); both are approaching the tipping point where poaching ceases to be sustainable and deaths will start to exceed births. Encouragingly, Table 4 shows that at a continental level poaching in the first half of 2014 has levelled off and remains at average 2013 levels (3.00 rhinos poached/day).

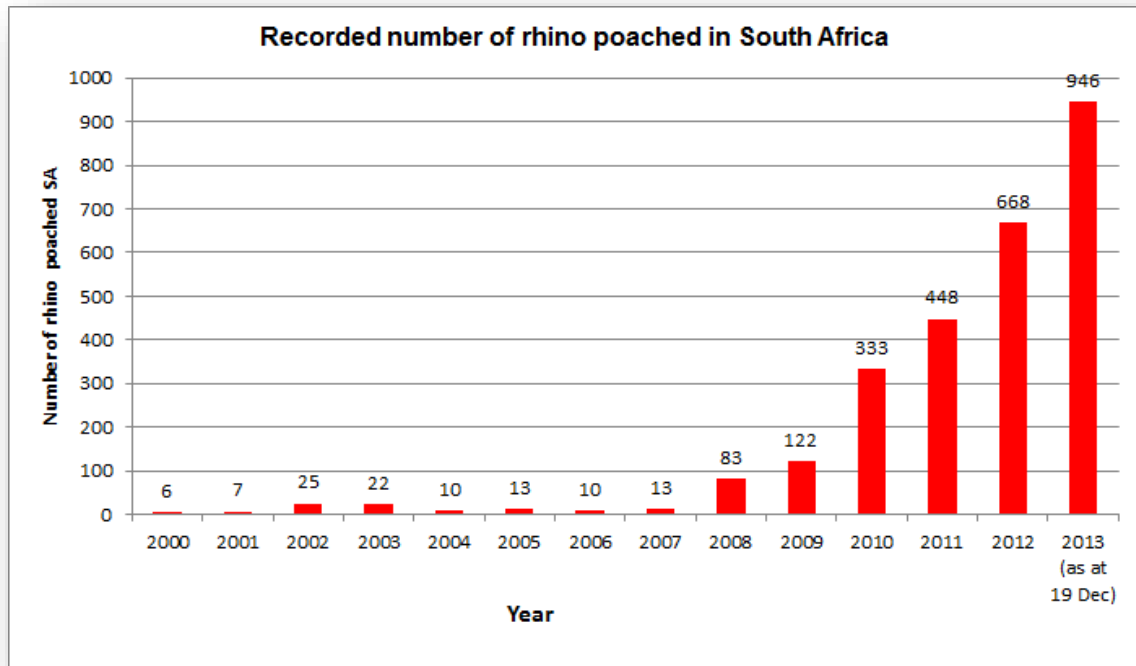
Table 4. Reported numbers of white and black rhinos poached in Africa from 1 Jan 2006 to 30 June 2014

Country	2006	2007	2008	2009	2010	2011	2012	2013	2014 1H	Up to	Simple 2014 Projection	Country Totals 2006-June 2014	2012 as % of end 2012 Rhino Num	2013 as % of end 2012 Rhino Num	2014 Proj as % of end 2012 Rhino Num
Botswana	-	-	-	-	-	-	2	2	-	16-Jun	-	4	1.0%	1.0%	0.0%
DR Congo	-	-	2	2	-	-	-	-	-	n/a	-	4	n/a	n/a	n/a
Kenya	3	1	6	21	22	25	29	59	23	12-Jun	52	189	2.8%	5.8%	5.1%
Malawi	-	-	-	-	-	-	2	1	2	23-Jun	4	5	7.7%	3.8%	15.4%
Mozambique	-	9	5	15	16	10	16	17	1 (Min)	31-Mar	4+	89	1600.0%	1700.0%	400.0%
Namibia	-	-	-	2	2	-	1	6	10	30-Jun	20	21	0.0%	0.3%	0.9%
South Africa	36	13	83	122	333	448	668	1,004	496	30-Jun	1,000	3,203	3.2%	4.8%	4.8%
Swaziland	-	-	-	-	-	2	-	-	1	23-Jun	2	3	0.0%	0.0%	2.0%
Tanzania	-	-	2	-	1	-	2	-	2	23-Jun	4	7	1.6%	0.0%	3.1%
Uganda	-	-	-	-	-	-	-	-	-	26-Jun	-	-	0.0%	0.0%	0.0%
Zambia	-	1	-	-	-	-	-	-	-	24-Jun	-	1	0.0%	0.0%	0.0%
Zimbabwe	21	38	164	39	52	35	29	18	4	12-Jun	9	400	4.1%	2.5%	1.3%
Total	60	62	262	201	426	520	749	1,107	539		1,095	3,926	2.9%	4.3%	4.3%
Poached/day	0.16	0.17	0.72	0.55	1.17	1.42	2.05	3.03	3.00		3.00				

Source: IUCN SSC AfRSG, TRAFFIC and CITES Rhino Working Group.

Note that these figures represent the minimum number reported poached, and the true figure is likely to be higher as some carcasses will not have been detected.

By end of December 2013, the number of rhino killed in South Africa had risen to 1004 (4.78%) (Figure 9). However the rising trend has stabilised (Figure 10). It remains to be seen whether this apparent levelling off in poaching in South Africa (and indeed also continental levelling off) will continue, or whether poaching will once again continue to trend upwards as happened after a period of about a year of relative stability in South Africa 2010/11. Poaching spiked in Kenya in 2013 reaching 5.76% of the population at the start of the year (Table 4). Poaching of rhino continued to decline in Zimbabwe accounting for 2.54% in 2013 (Table 4).



Source: AFRSG diagram based on historical and South African Dept of Envir Affairs/National Wildlife Crime Reaction Unit data, with support from Save the Rhino International.

Figure 9. The rise in poaching of rhino in South Africa.

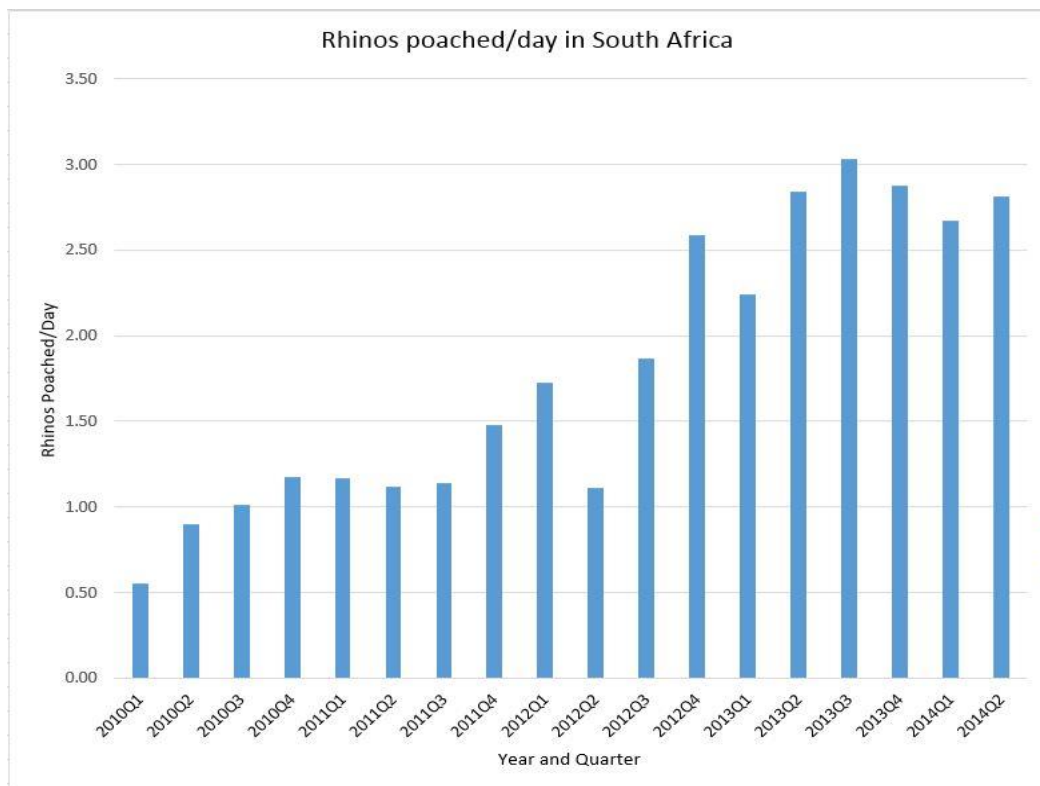


Figure 10. Poaching of Rhino in South Africa from 2010 – 2014.

Kruger National Park continues to bear the brunt of rhino poaching in South Africa with 425 rhino lost in 2012 and 606 in 2013. It has proved necessary to replace the eastern border fence in an attempt to reduce losses of rhino

moving into Mozambique. Of the total number of SA rhinos poached in 2013, 114 rhinos have been killed in Limpopo province, 92 in Mpumalanga, 85 in KwaZulu-Natal and 87 in North West (data from AfRSG).

High prices paid for rhino horn on the international market have stimulated a sophisticated poaching operation involving criminal syndicates that employ well-equipped ex-military and professional hunters. This is presenting a serious challenge to prevailing conservation efforts (Section 2.2). The twin goals of conservation are breaking or disrupting the transnational organised criminal networks and providing alternative economic opportunities in adjacent poor communities to discourage poaching.

2.6 DRIVERS OF WILDLIFE DECLINE

It is essential to address the current wildlife emergencies over rhino and elephant but also to address the root causes of wildlife decline in Africa. If the latter is not done, there will be no escape from the cycle of crisis management. Table 5 arranges the main threats to wildlife under three categories of threat, or 'drivers of wildlife decline'. Proximate drivers are threats to wildlife that account immediately for its decline; they can be addressed effectively by a combination of national investment, conservation-development projects, and international agreements and action. Ultimate drivers derive from the wider changes in society that ultimately bring about the proximate threats; there is little one can do about these other than to introduce systems that assist adaptation to the inevitable change.

There is a third category of threat that we identify as Social drivers of wildlife decline. These are socio-economic, political and institutional weaknesses within society which accelerate wildlife decline and undermine conservation efforts. They include, for instance, the lack of leadership from politicians on wildlife conservation, lack of awareness or appreciation of wildlife values in educated classes, and lack of knowledge about wildlife management in rural communities. Such problems may be deep-seated but they can in principle be effectively addressed with the support of conservation and development programmes. A related problem as previously mentioned is the underfunding of many parks in the region¹⁷.

¹⁷ Cumming, D.H.M. 2007. Transfrontier conservation areas, animal diseases and human livelihoods: issues of system health and sustainability. Percy FitzPatrick Institute of African Ornithology and AHEAD programme, SA.

Table 5. Drivers of Wildlife Decline in Southern Africa

Category of threat	Drivers of Wildlife Decline
Proximate Drivers	Demand-driven illegal killing and unsustainable consumptive utilisation of elephant, rhino, bushmeat and other wild species.
	Fragmentation and loss of habitat and species' range through alteration and conversion of natural ecosystems.
	Functional failure in protected areas (inadequate coverage, lack of investment in management, encroachment, degazetting and excision, poaching).
	Failure in governance of wildlife estate.
	Human-wildlife conflict in the wider sense (pesticides, pollution, road kill, farm-wildlife conflicts).
Ultimate Drivers	Human population growth in Southern Africa
	Rising international demand for land and natural resources. (Demand for land in Southern Africa includes its use for export crops. Demand for natural resources includes the exploitation of minerals, leading to loss of forest habitat and increased poaching.)
	Climate change.
Social Drivers	Political indifference to wildlife issues and the need for leadership
	Rural poverty
	Legal and policy frameworks that promote unsustainable resource-use and 'fortress management' of protected areas
	Agricultural subsidies including the EU beef subsidies.
	Underfunding of parks
	Lack of conservation policy that is embedded in African society. This is undoubtedly the greatest long-term challenge for conservation.

In summary, proximate drivers are where much of today's conservation work is focussed; ultimate drivers are not amenable to change; social drivers are difficult to change but key to the long-term future of African wildlife.

It is also worth noting that threats are often interlinked such that one may work in concert with another. In the case of rhino the impact of increased poaching has increased the cost of protection and increased risks to staff and families from well-armed and aggressive poaching gangs. This when coupled with declining economic incentives has resulted in increasing numbers of owners considering or getting rid of their rhino. If this trend continues it threatens to decrease range and ultimately numbers of rhino as well as revenue for conservation agencies.

2.7 CONSERVATION OF BIRD AND MAMMAL MIGRATIONS

Mass migrations of mammals and birds are some of the most inspiring biological dramas on the planet and yet by virtue of their long distance movements they are under major threat.

2.7.1 Mammals

In the case of African mammal migrations, the main causes of decline are unsustainable hunting and loss of seasonal ranges and/or migration routes through fencing, livestock, agriculture or human settlement¹⁸. One of the principal threats is restricted access to food or water. Migrations of scimitar-horned oryx and hartebeest have disappeared from the Sahara of Niger and Chad, and the Ogaden of Somalia and Ethiopia respectively. Wildebeest migrations in the Athi-Kapiti Plains in southeast Kenya are extinct. Wildebeest once migrated northeast of Etosha National Park in Namibia during dry seasons, but cordon fencing in 1973 closed all movements. Fencing in Kruger National Park in South Africa blocked wildebeest migration, and populations declined from 6000 to 750. Historical (1850s) migrations of 10 000s of trekbokke (springbok, black wildebeest, blesbok, eland and quagga), no longer occur in the Karoo and Highveld of South Africa and quagga are extinct as a species. Reports of extant mass migrations of springbok in Botswana are unconfirmed.

We know even less about the migrations of bats however the ubiquitous straw-coloured fruit bat travels large distances in massive colonies. Using satellite-tracking collars, individuals have been recorded moving from the colony of several million in Kasanka NP in Zambia over neighbouring Democratic Republic of Congo, covering 1000 km in just a month.

Conserving mass mammal migrations means preserving the animals' freedom of movement in response to the temporal aspects of food and water across seasonal extremes. This requires understanding basic parameters of the migration (e.g. location, numbers, routes, distances travelled), ecological drivers, habitat needs and threats. When ungulates are excluded from forage and water resources, their numbers plummet and migrations disappear. Recent evidence from zebra studies in Botswana reveals that a remnant of the former migratory population may persist at low density in smaller ranges that have enough resources to maintain them. When barriers are removed the migration pattern has been recovered¹⁹ (also see Box 2).

2.7.2 Birds

Africa is of crucial importance for the survival of millions of migratory birds which depend on the continent for breeding, resting, feeding and other aspects of their life cycles. Population trend estimates for this region have remained poor or even become worse. The causes of decline are hard to pin down. A recent review of Afro-Palaeartic migrant bird populations indicates that the interacting factors of anthropogenic habitat degradation and climatic conditions, particularly drought in the Sahel zone, are the most important causes of decline²⁰. It calls for flyway approach to conservation that combines with an understanding of land management practices that integrate the needs of birds and people in these areas (Figure 11). Many waterbirds congregate in key estuaries where site-based conservation can help protect the migrations.

The Convention on Migratory Species (CMS) works internationally to conserve migrations across taxa²¹. They focus on species threatened with extinction, but include other species whose migrations would significantly benefit from international cooperation, including strictly migratory and nomadic species.

¹⁸ Review in: Harris, G., Thirgood, S., Hopcraft, J.G.C., Cromsight, J.P.G.M., and Berger, J. (2009) Global decline in aggregated migrations of large terrestrial mammals. *Endangered Species Research*, 7: 55-76.

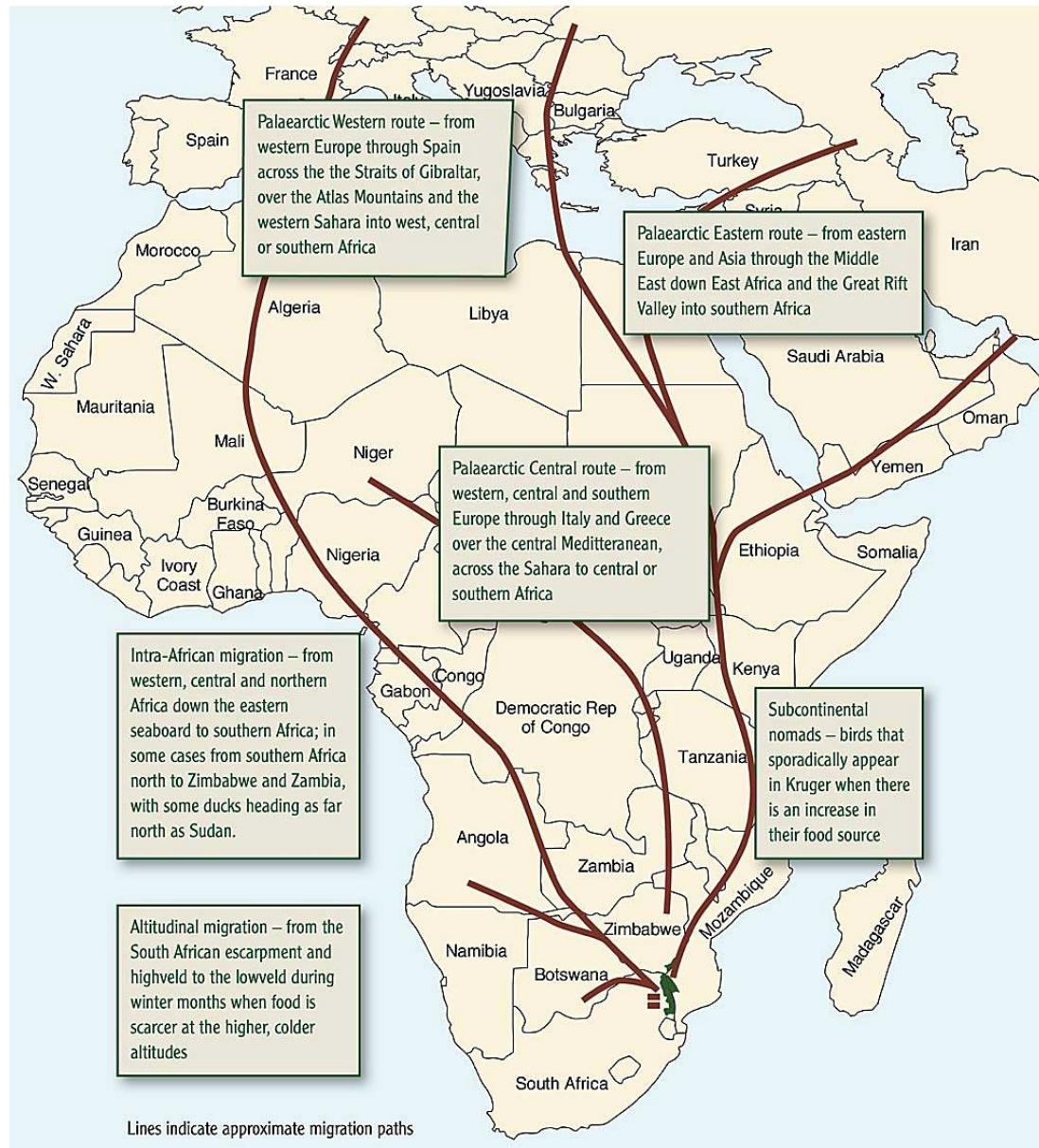
¹⁹ Bartlam-Brooks, H.L.A., Bonyongo, M.C. & Harris, S. (2011) Will reconnecting ecosystems allow long-distance mammal migrations to resume? A case study of a zebra *Equus burchelli* migration in Botswana. *Oryx* 45: 210 – 216.

²⁰ Vickery, J. A., Ewing, S. R., Smith, K. W., Pain, D. J., Bairlein, F., Škorpilová, J., Gregory, R. D. (2014), The decline of Afro-Palaeartic migrants and an assessment of potential causes. *Ibis* 156: 1-22.

²¹ <http://www.cms.int/>

Developed under the framework of the CMS, the African-Eurasian Migratory Waterbird Agreement (AEWA²²) is an intergovernmental treaty dedicated to the conservation of migratory waterbirds and their habitats across Africa and Europe, parts of Asia, Canada and the Middle East.

The Ramsar Convention²³ is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.



Source: <http://birding.krugerpark.co.za/birding-in-kruger-migration-routes.html>

Figure 11. Approximate flyways to Kruger NP which is celebrated for its migrant birds

²² <http://www.unep-aewa.org>

²³ <http://www.ramsar.org>

3 ONGOING CONSERVATION EFFORTS

3.1 REVIEW OF STRATEGIC APPROACHES TO WILDLIFE CONSERVATION

Natural resource management is as old as humankind and the protection of sacred sites may have equally ancient origins. However nature conservation as a major form of land-use and a significant contributor to the national economy is a much more recent development. In Africa the first parks were established less than a century ago by colonial administrations wishing to preserve the world's remaining wildernesses from the inroads of industrial modernity (Table 7). Beginning with those early national parks, it is possible to distinguish a series of strategic approaches to the conservation of wildlife (Table 6). Each one can be associated with an emerging conservation paradigm with global application.

Table 6. *Strategic Approaches to Nature Conservation – with some of their protagonists*

• National Parks	Western Tradition, UNESCO
• Biodiversity Hotspots	Norman Myers & CI
• Ecoregions	WWF (FAO)
• Water Basins	WWF
• Conservation for Development	IUCN, SADC
• Biosphere Reserves	UNESCO (MAB)
• Transfrontier Conservation	PPF, IUCN and SADC

3.1.1 National Parks

The earliest conservation paradigm in modern times was the establishment of national parks primarily as sanctuaries for plants and animals where human intervention should be kept to a minimum. The first parks in Africa were established in the 1920s (Table 7). Since then the concept of protection has been widened to incorporate a range of human uses. The area protected has increased steadily up to the present time (Figure 12)²⁴.

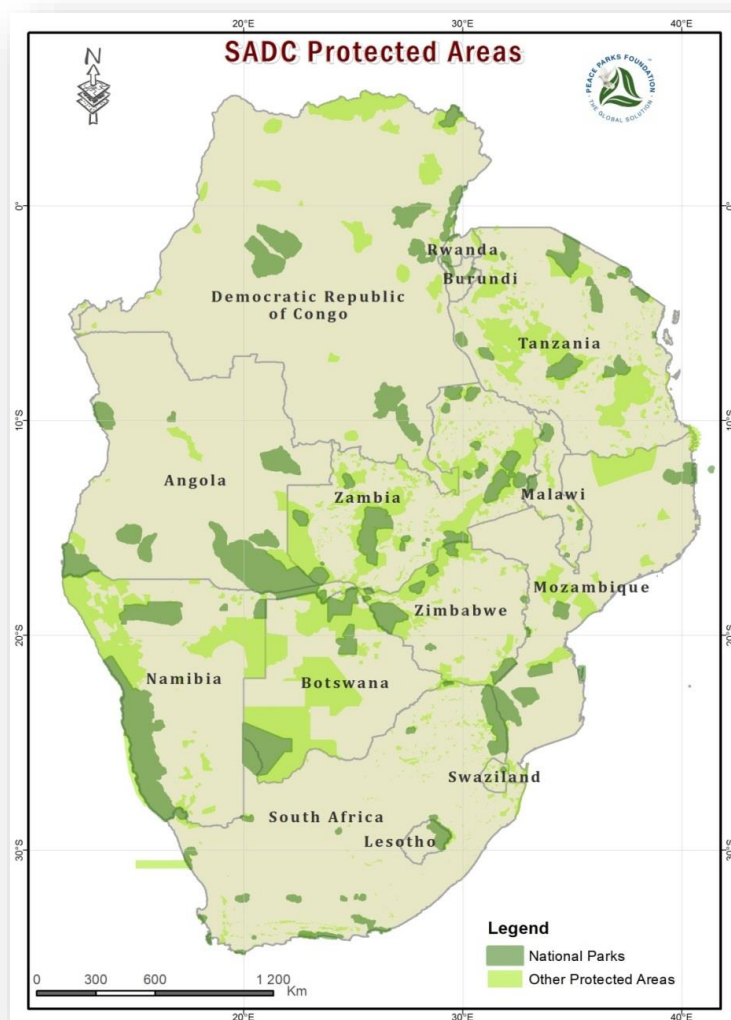
Almost unquestionably this paradigm remains the most important approach to conservation today but it faces considerable challenges: underfunding, isolation from similar areas of natural habitat, hard edges between parks and agricultural land or settlements, alienation of the local population which may precipitate encroachment within the parks and unsustainable (illegal) use of wildlife, timber and other natural resources. Whereas the national parks in some countries and locations in southern Africa effectively conserve large mammal populations and rare species, in other countries the picture is less favourable. The situation of the Kissama, Cangandala, Iona, Bikuar and Cameia National Parks in Angola is one of almost total abandon with neither equipment nor staff on site. Part of these areas are today occupied by people that practice hunting and bush-burning at levels that have caused the disappearance of large and small mammals. In some cases, large numbers of people live or farm in the protected areas.

²⁴ Bastian Bertzky, Colleen Corrigan, James Kemsey, Siobhan Kenney, Corinna Ravillious, Charles Besançon and Neil Burgess (2012) Protected Planet Report 2012: Tracking progress towards global targets for protected areas. IUCN, Gland, Switzerland and UNEP-WCMC, Cambridge, UK.

Table 7. First National Parks in Africa

1925	Virunga NP (DRC) established
1926	Kruger NP (SA) established
1926	Matobo NP (Zimbabwe) established
1948	Tsavo NP (Kenya) established
1950	Kafue NP (Zambia) proclaimed
1951	Serengeti NP (Tanzania) established
1960	Gorongosa NP (Mozambique) named
1964	Iona NP (Angola) proclaimed
1967	Chobe NP (Botswana) declared
1967	Etosha NP (Namibia) declared
2000	Kgalagadi Transfrontier Park (Botswana & SA) opened

Useful developments in protected area management over the past half century have included the following: buffer zones, community conservation, world heritage sites, public private partnerships, GPS management information systems, remote sensing technologies, and transfrontier conservation.



Source: Peace Parks Foundation

Figure 12. The national parks of southern Africa, December 2013

3.1.2 Biodiversity Hot Spots

An early attempt at the systematic conservation of biodiversity was Norman Myer's hotspot concept which identified regions of the world with high species diversity and high endemism. Today Conservation International recognises eight hotspots in Africa of which five occur wholly or partly in southern Africa: Cape Floristic Region, Succulent Karoo, Maputaland-Pondoland-Albany, Eastern Afromontane and Madagascar and the Indian Ocean Islands.

A related approach is the Important Bird and Biodiversity Area Programme (IBA) of Birdlife International which identifies areas with bird species that are vulnerable to global extinction and amenable to conservation action. More than 1,230 IBAs have been identified in Africa.

Groups of species are sometimes used to identify gaps in protected area coverage, for instance with birds²⁵ and mammals²⁶. In a recent example, the world's 173,461 designated protected areas were prioritised according to their 'irreplaceability' for ensuring conservation of 21,419 vertebrate species encompassing all birds, mammals and amphibians but not freshwater fish or reptiles²⁷.

3.1.3 Ecoregions and the biogeographic approach

The representation of biomes, ecoregions, or other biogeographic areas can be used for detecting gaps in a region's PA network. MacKinnon and MacKinnon (1986)²⁸ reported the extent to which major vegetation types of the Afrotropical Realm occur within protected areas at national levels. They used White's (1983) vegetation map of Africa²⁹ as the basis for their habitat classification. MacKinnon and MacKinnon's findings for the Southern African region were reworked using a simplified version of White's vegetation map in which 19 as opposed to 47 vegetation types were used³⁰. The analysis revealed that habitats with the greatest plant species richness and endemism (Lowland fynbos, Afro-montane grassland and forests, lowland forest and the Karoo) were the least protected. A systematic analysis of gaps in global habitat protection (based on ecofloristic zones) revealed that montane dry habitat in South Africa was inadequately protected³¹.

The most widely utilised biogeographic classification today is that of biomes and ecoregions developed by WWF. Ecoregions are now used extensively in conservation planning. Nevertheless the approach has its own limitations. Although the criteria for mapping ecoregions distinguish areas with distinctive fauna, they are based on vegetation landscapes. Small technical differences in classification criteria have large effects on ecoregion areas and therefore on their protection status (Figure 13).

²⁵ de Klerk, H.M., Fjeldsa, J., Blyth, S. & Burgess, N.D. (2004). Gaps in the protected area network for threatened Afrotropical birds. *Biological Conservation* 117: 529-537.

²⁶ Fjeldsa, J., Burgess, N.D., Blyth, S. and de Klerk, H.M. (2004). Where are the major gaps in the reserve network for Africa's mammals? *Oryx* 38: 17-25.

²⁷ Le Saout, S. et al. 2013. Protected Areas and Effective Biodiversity Conservation. *Science* 342: 803-805.

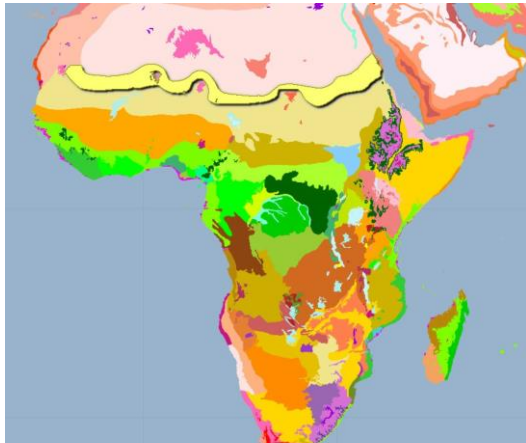
²⁸ MacKinnon, J and MacKinnon, K (1986) Review of the Protected Areas System in the Afrotropical Realm, IUCN/UNEP, Gland, Switzerland

²⁹ White, F (1983) The vegetation of Africa: A descriptive memoir, UNESCO, Paris.

³⁰ Cumming, D. H.M. 1999. Study on the Development of Transboundary Natural Resource Management Areas in Southern Africa- Environmental Context: Natural Resources, Land Use, and Conservation. Biodiversity Support Program, Washington, DC, USA.

³¹ Murray, M.G., Green, M.J.B., Bunting, G.C. & Paine, J.R. (1997). Biodiversity Conservation in the Tropics: Gaps in Habitat Protection and Funding Priorities. WCMC Biodiversity Series No. 6 (180 pages).

Ecoregions (WWF)



Ecofloristic Zones (FAO)

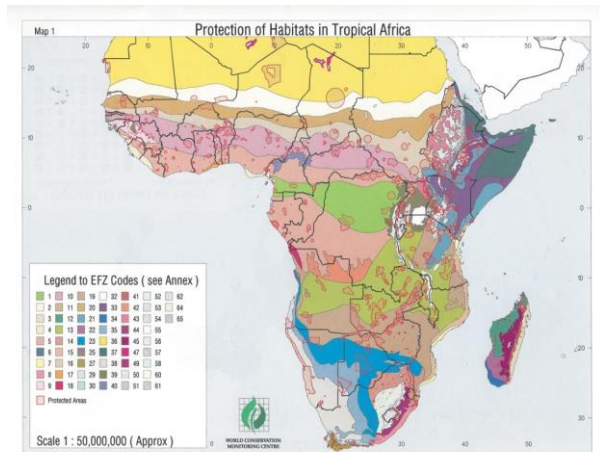


Figure 13. Ecoregions of Sub-Saharan Africa

In an attempt to improve on the ecoregions system as a basis for conservation planning, AWF developed its 'heartland' selection methodology which integrates biological distinctiveness and an index of threats to biodiversity. The former is generated from a combination of key factors associated with ecoregions – endemism, species richness and presence of large vertebrate assemblages; the latter from combining variables such as remaining habitat area, habitat block size, degree of fragmentation, human population density and the extinction risk of species (Figure 14).

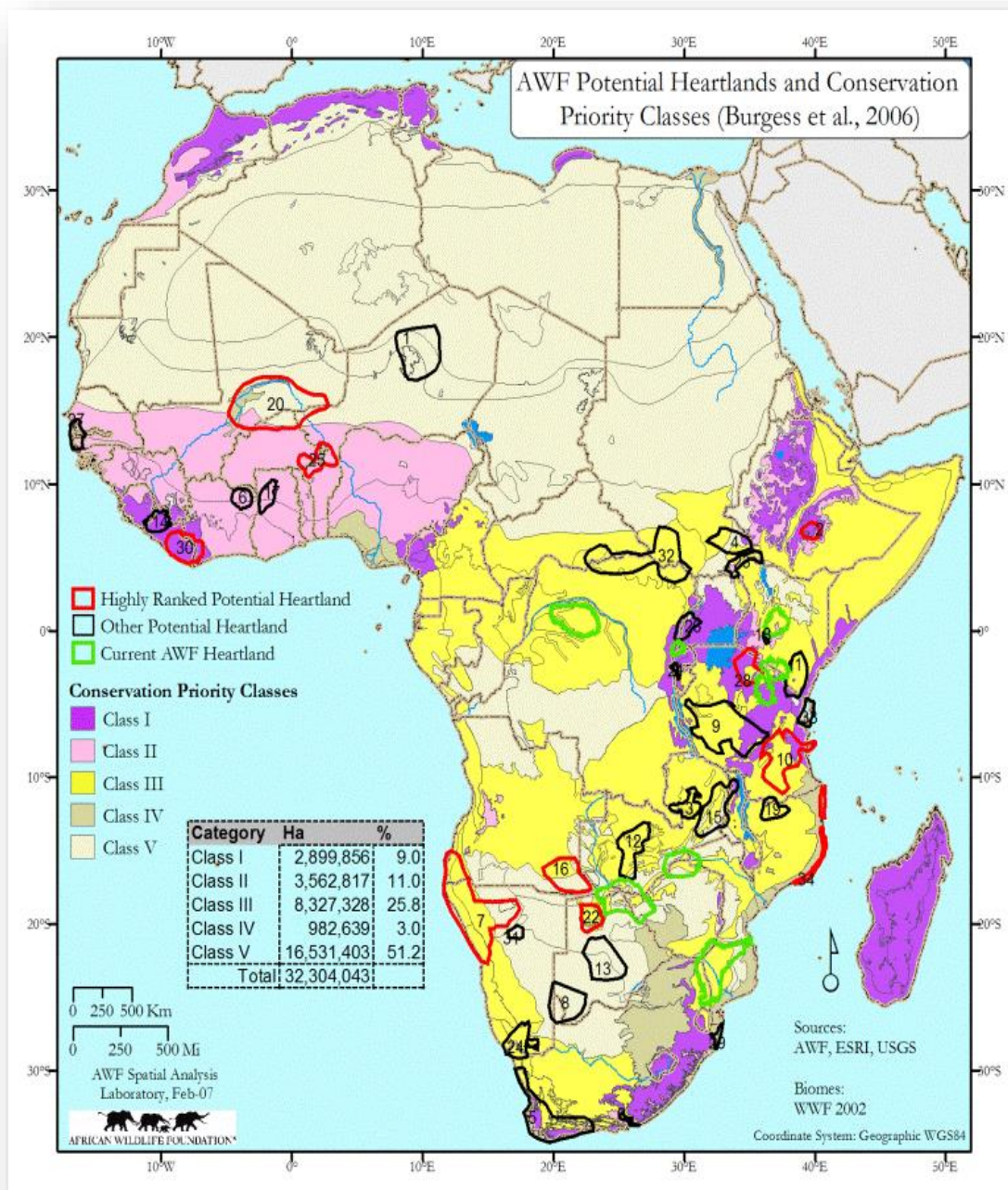


Figure 14. Map of AWF heartlands and priority ecoregions. Class 1 -ecoregions of global biological significance which are highly threatened; Class V - ecoregions of national biological significance which are stable and intact.

3.1.4 Water basins

It is possible to divide southern Africa more or less into river basins and to implement a conservation strategy based around the need to protect the basin and its water for wildlife and human welfare (Figure 15)³².



Figure 15. The major river basins of southern Africa³³

The river basin perspective is useful as a planning tool for sustainable development; its utility for conservation is not so clear-cut. In the case of small-to-medium sized ecosystems, the river-basin perspective is clearly vital. For example, the Okavango Delta depends critically on the flow of water from the Okavango River which is potentially affected by abstraction along the Panhandle (for settlements) or further upstream (to augment water supplies in the central area of Namibia); similarly the Serengeti-Mara ecosystem depends critically on the dry season flow of water in the Mara River which is now threatened by upstream abstraction for irrigation schemes. Securing the water flow into these wildlife ecosystems is fundamental to their long-term conservation. The correspondence between wildlife conservation and the immediate river-based threat is high.

In the case of large river basins however, the correspondence between upstream developments and downstream conservation areas can be weak. It could be argued, for instance, that attempts to conserve the truly vast catchment of the Zambezi River in Angola and Zambia risks dilution of the slender resource base available for wildlife conservation. Continuing with that logic, it could then be argued that efficient use of funds dictates that conservationists look within the Zambezi Basin to identify specific threats which link closely to specific wildlife areas. In the case of the Zambezi system, an example would be the Kafue Flats floodplain which depends critically on the hydrological regime of the lower Kafue River and how it is affected by the operation of two dams³⁴. Regulating the 'environmental flow' passing through the dams enables improved conservation of Kafue lechwe. Integrated River Basin Management and Integrated Water Resource Management are vital development goals; however choices need to be made between interventions at different scales. One of the criteria in the wildlife sector

³² WWF 2012. Miombo Ecoregion "Home of the Zambezi" Conservation Strategy 2011-2020. WWF, Harare, Zimbabwe.

³³ UNOCHA (2009). Web resource: <http://reliefweb.int/map/angola/southern-africa-major-river-basins-31-mar-2009>. Accessed 27 January 2014

³⁴ Sebastian, A.G. 2008. Transboundary water politics: conflict, cooperation and shadows of the past in the Okavango and Orange River Basins of southern Africa. PhD Thesis, University of Maryland, USA.

is efficient use of scarce funds for wildlife conservation at the ecosystem scale. Whole water governance and basin-planning system development may not always pass that criterion for use of wildlife funds. Understanding the nature of the connection between upstream catchment and downstream livelihoods and wildlife is the key step in making rational decisions of this kind.

3.1.5 Conservation for Development

In 1980 the publication of the World Conservation Strategy by IUCN, UNEP and WWF signalled the beginning of a new conservation policy which harnessed the economic potential of sustainable development. The need for this approach was appreciated early on in Zimbabwe which, in common with most other African countries, had in place a system of State ownership of wildlife which resulted in a decline of wildlife outside of protected areas^{35,36}. The Parks and Wildlife Act of 1975 gave landholders in Zimbabwe the right to manage wildlife for their own benefit and heralded an immediate reversal in wildlife declines on private land.

During the 1980s the legal provisions of this Act were extended to Rural District Councils (RDCs), and thus partially to rural communities in communal lands. It enabled them to manage and benefit from wildlife resources through the emerging Communal Areas Management Programme for Indigenous Resources (CAMPFIRE). The programme ran into difficulties through the concentration of power in RDCs³⁷ but the essential model of decentralization and devolution of administrative powers and responsibilities for communal resources was adopted elsewhere in southern Africa.

Following the pioneering CAMPFIRE programme in Zimbabwe, Community Based Natural Resources Management (CBNRM) strategies were formulated and implemented in Zambia in 1988 under the Administrative Management Design (ADMADE) for Game Management Areas (GMAs). Despite a promising start, ADMADE failed to establish itself. A major reason for this failure according to one expert was inappropriate understanding of the specific context of “wildlife” and its uses by rural residents³⁸.

Namibia's Nature Conservation Act of 1996 provided a basis for communal area conservancies and granted conservancy members the right to consumptive uses of wildlife. Namibia's 1998 land policy acknowledged the rights of local communities to woodland resources. The development of ‘conservancies’ within communal lands has been particularly successful in conservation terms with populations of many large mammal species making spectacular recoveries³⁹. The pioneering work of Namibia's NGO, Integrated Rural Development and Nature Conservation (IRDNC), has led to one of the most progressive policy environments for community-based natural resource management in southern Africa, with local communities getting significant benefits from the use of wildlife resources. Government only confers wildlife user-rights to communities in Conservancies, they have no land rights. This is a much-overlooked weakness which is beginning to be addressed.

3.1.6 Biosphere Reserves

One of the early conservation initiatives to advocate the idea of sustainable development was the biosphere reserve in which areas are proposed by residents, ratified by national committees and designated by UNESCO's Man and

³⁵ Parker I.S.C.P (1993). The Natural Justice of Ownership. Commissioned Essay for the Norwegian Government written as comment on plans for the Serengeti ecosystem in Tanzania and Kenya. 3pp.

³⁶ Martin. R.B. 2008. A Review of Organisational Performance and Development of Strategic Options to Improve the Performance of The Botswana Department of Wildlife and National Parks.

³⁷ Cambbell, B.M. & Sithole, B. 2000. CAMPFIRE: Experiences in Zimbabwe. *Science* 287: 41.

³⁸ Marks, S.A. (2005) The legacy of a Zambian community-based wildlife program. In: B. Child and M Lyman (eds) *Natural Resources as Community Assets*. The Sand County Foundation and The Aspen Institute, pp. 181-209.

³⁹ Dickson, B., Hutton, J. and Adams, B. (eds.) 2009. *Recreational Hunting, Conservation and Rural Livelihoods: Science and Practice*, Blackwells, Oxford.

Biosphere (MAB) programme. The main characteristic of biosphere reserves is that they embraced conservation and development by using zoning schemes with core protected areas surrounded by development zones. Conceptually, this model is attractive, with 610 sites currently designated globally. Yet the practical reality of implementing dual 'conservation' and 'development' goals has proved to be challenging, with few examples successfully conforming to the model's full criteria⁴⁰. This may partly explain the new emphasis under the Madrid Action Plan⁴¹ to recognise the potential of biosphere reserves to function as 'learning sites for sustainable development'.

3.1.7 Transfrontier Conservation

The Transfrontier Conservation Area (TFCA) is a relatively new conservation initiative that can bring together a complex and diverse mosaic of land uses under one shared or joint management structure, including national parks and game reserves, forest reserves, wildlife and game management areas, communal land and private land. It shares the concept of joint conservation and development with biosphere reserves but in addition has the role of promoting culture and peace. It also differs in that it frequently encompasses a much larger area than the biosphere reserves and usually includes well-recognised national parks. Its central importance to conservation of wildlife lies in its policy of addressing multiple issues. Section 4.1 outlines the role of TFCAs in more detail.

3.2 CONSERVATION OF ELEPHANTS AND RHINOS

Our proposed strategic approach to elephant poaching, rhino poaching and wildlife trade is given separately (Sections 1-3 in Volume 6). This section summarises information on distribution and status of elephant and rhino in Southern Africa, threats and risks, conservation planning, action being taken and recommended future actions. A key part of the strategy for controlling trade in ivory and rhino horn is the establishment of inter-agency Wildlife Enforcement Networks (WENs) one for each sub-region, and in all countries individually. Another is development of the newly agreed Southern African Wildlife Enforcement Network (SAWEN). Some regional features to conservation of elephant and rhino are outlined below.

3.2.1 Elephant⁴²

Examination of poaching levels based on the Proportion of Illegally Killed Elephants (PIKE), a statistic determined from data gathered by the programme for Monitoring the Illegal Killing of Elephants (MIKE), reveals consistent differences in poaching levels between the different African regions, with Central Africa showing the highest overall poaching levels, in contrast with Southern Africa, which shows the lowest overall levels (Figure 16). Pockets of poaching at higher levels in southern Africa occur in northern Mozambique, northern Zimbabwe and in the Caprivi Strip⁴³.

⁴⁰ Coetzer, K.L., Witkowski, E.T.F. & Erasmus, B.F.N. 2013. Reviewing Biosphere Reserves globally: effective conservation action or bureaucratic label? *Biological Reviews*.

⁴¹ UNESCO (2008). Madrid Action Plan for Biosphere Reserves (2008–2013). UNESCO Division of Ecological and Earth Sciences, Paris.

⁴² The proposed strategic approach to elephant poaching, including trade, law enforcement and actions needed, is given separately (Volume 6; Section 1). This section summarises some particular regional issues and concerns.

⁴³ CITES 2012. Status of elephant populations, levels of illegal killing and the trade in ivory: A report to the CITES Standing Committee. CITES Sixty-second meeting of the Standing Committee, Geneva (Switzerland), 23-27 July 2012.

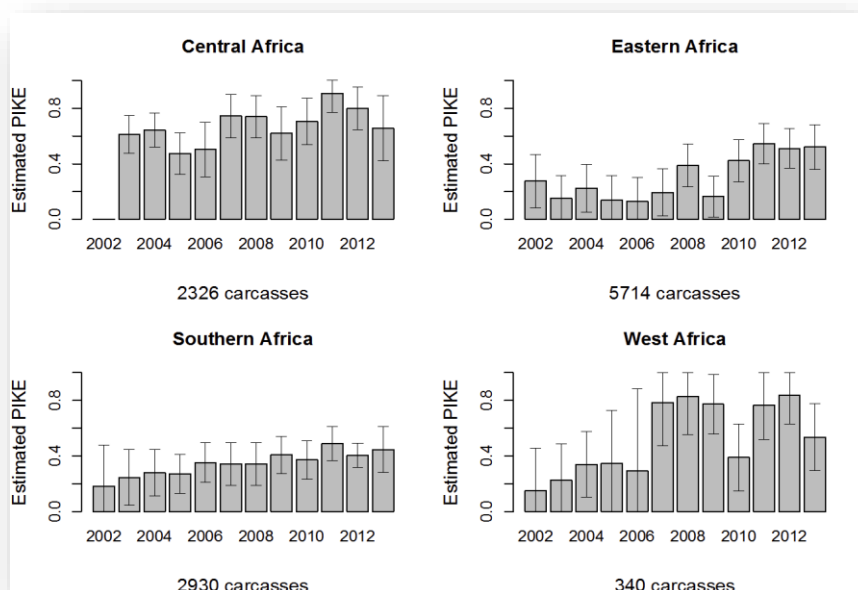


Figure 16. Regional trends with 95% confidence intervals of elephant poaching levels in different regions of Africa.

The MIKE programme has statistically evaluated relationships between PIKE levels and a wide range of ecological, biophysical and socio-economic factors at the site, national and global levels. Three factors consistently emerge as very strong predictors of poaching levels and trends: (a) poverty at the site level, (b) governance at the national level and (c) demand for illegal ivory at the global level. Regarding poverty, sites suffering from higher levels of poverty (as indicated by infant mortality) experience higher levels of elephant poaching. This suggests that there may be a greater incentive to facilitate or participate in the illegal killing of elephants in areas where human livelihoods are insecure. Furthermore, this relationship highlights a close linkage between the wellbeing of people and that of the elephant populations with which they coexist.

In the context of southern Africa as a whole there is no immediate threat to the elephant population. However the picture could change depending on market conditions and investment in wildlife law enforcement. Significant numbers of elephants were killed in 2012 in Mozambique (Niassa NR, Quirimbas NP and Limpopo NP), Zimbabwe and Angola. Some of the poaching of elephants in Zimbabwe has utilised cyanide procured from a local gold mine. Despite an increase in poaching recorded in many parts of southern Africa, the main elephant-related problem outside of Mozambique is the growing population of elephants in KAZA TFCA and the need for mitigation of human-elephant conflicts.

3.2.2 Rhino⁴⁴

3.2.2.1 Criminal Investigation

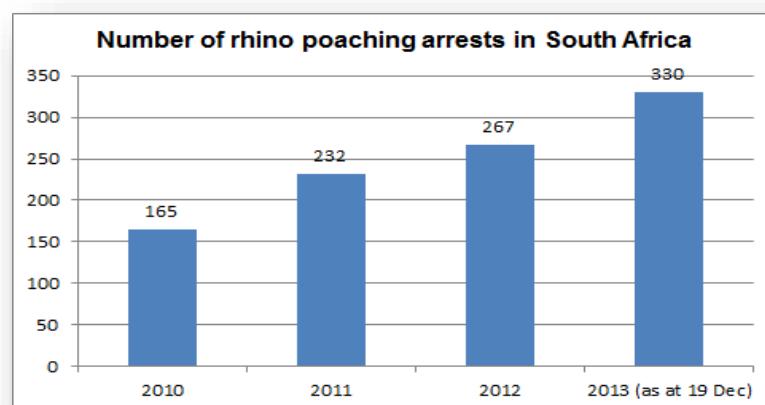
An ability to trace confiscated horn back to its natural point of origin through forensic analysis has long been recognised as a potentially powerful tool for understanding and dismantling the trade networks involved. The same methods can be used also to register legal stocks, and aid their identification in the event of theft. The Veterinary Genetics Laboratory (VGL) at the University of Pretoria has emerged as Africa's leading forensics lab with regard to rhinos specifically. The rhino DNA database developed and run from VGL (known as RhoDIS - Rhino DNA Index

⁴⁴ Our proposed strategic approach to rhino poaching, including trade and law enforcement and actions needed, is given separately (see Volume 6; Section 2). This section summarises some particular regional issues and activities.

System) continues to expand, and DNA analyses are increasingly being used in criminal investigations and prosecutions. DNA profiling would also be an essential component in monitoring legal trade in horn, if this were agreed.

Many other approaches to criminal investigation are being tested, including DNA profiling as a traceability tool, drones, tracking devices, spatial monitoring and reporting tools, protected sanctuaries, community involvement and awareness programmes, dehorning of wild populations, an integrated national electronic database, raising penalties for those convicted of rhino crimes, and farming of rhinos for their horns in Asia. These efforts are paying off as indicated by the possible levelling off of poaching in South Africa (Section 2.5, Figure 10). Figures released by the South African Department of Environmental Affairs, show an increasing number of rhino related arrests over the past few years (Figure 17). In 2013, some 127 alleged poachers were arrested in the Kruger National Park alone. The penalties for rhino poaching are becoming increasingly severe and frequent.

Specialist donor institutions and programmes include the following: SADC Rhino Management Group, SADC Rhino and Elephant Security Group/Interpol Environmental Crime Working Group, IUCN African Rhino Specialist Group, WWF-funded Black Rhino Range Expansion Project (BRREP), WWF-African Rhino Programme (ARP), WWF-South Africa, US Fish and Wildlife Service, International Rhino Foundation, Save the Rhino International, African Wildlife Foundation, Rhino Action Group Effort, Stop-Rhino-Poaching and the Endangered Wildlife Trust. The Department of Environmental Affairs, in consultation with the National Treasury, is to establish a National Rhino Fund to coordinate the financing of anti-poaching initiatives in South Africa.



Source: AfRSG, Save the Rhino International and South African Department of Environmental Affairs (2013).
Note that the arrests in SA as of 31 December 2013 reached 345 (AfRSG per com).

Figure 17. Increase in arrests for poaching rhino in South Africa

3.2.2.2 Consumptive Use

Currently, South Africa & Namibia have a quota of five black rhino bulls per year. White rhino hunting is less closely regulated, as the overall population is bigger, and hunting primarily takes place on private land. In South Africa, live-sale of White Rhinos on auction, limited sport hunting of surplus males, and ecotourism have provided incentives for private sector conservation and generated much needed funds which can help pay the high cost of successfully monitoring, protecting and managing rhino. An influential cadre of conservationists supports consumptive utilisation, particularly safari hunting, because it brings in large revenues for conservation from a small number of trophy animals legally shot by wealthy clients. They point out that sustainable use, including through trophy hunting, is a fundamental pillar of (for example) Namibia's conservation approach, and has been instrumental

in its success. IUCN's own policy has long recognised that sustainable use of wildlife produces social and economic benefits to rural communities which in turn contribute to biodiversity conservation. Elephant and rhino are viewed no differently. Carefully managed hunting of these and other wildlife species has proven to be an effective means of encouraging and enabling rural communities, private land holders, and indeed governments in a number of countries to protect and invest in wildlife⁴⁵.

Viewed from a continental perspective, the benefits of sustainable hunting in parts of southern Africa do not extend to the rest of the continent. As noted in Volume 6; Section 2, it is unlikely that consumptive utilisation of rhino will reduce the illegal killing of wild rhinos and/or the demand for their horns. Sustainable hunting and horn-farming do not threaten rhino species directly but they can and do open the door to illegal trade. The view is taken that the institutional and market arrangements needed to manage a legal trade would – irrespective of their sophistication – not only be extremely costly but also, in view of the intractable and price-inelastic nature of the demand, be quite unable to close the black-market for illegal horn any more effectively than has the current total ban. Consequently, the basic strategy for rhinos going forward must be to have at least one or two viable populations of each sub-species survive the current onslaught. If that can be done a recovery from the brink, as proved once before, always remains possible. Nonetheless alternative options, inclusive of a legal trade in horn along with demand reduction, should be investigated thoroughly.

3.2.2.3 Investment in Protected Areas

One of the weakest elements in the conservation of rhino in southern Africa can be attributed to inadequate investment in the management of protected areas. Surveys of rhino numbers in nine African countries (1=CAR, 2=Tanzania, 3=Somalia, 4=Mozambique, 5=Zambia, 6=Kenya, 7=South Africa, 8=Namibia, 9=Zimbabwe) from 1980-84 were compared with the spending by central governments on their conservation areas (Figure 18). Stable populations of rhino (0% change in numbers) had an intercept of \$230 per square kilometre. This was the minimum expenditure for adequate conservation of rhino in protected areas⁴⁶. In today's currency, the equivalent expenditure would be \$450 per square kilometre.

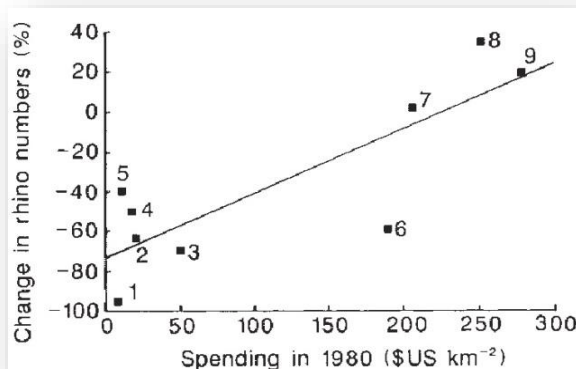


Figure 18. Relationship between the expenditure on parks and effectiveness of rhino conservation (Leader-Williams and Albon 1988)⁴⁷

A survey from ten years ago reveals that the actual expenditure is well below this critical level (Figure 19). It explained the inability of nations to stem the tide of rhino poaching at that time, except in South Africa. It would be

⁴⁵ SULi (2013). Open letter regarding the auction of a permit to hunt a Namibian Black Rhino. Sustainable Use and Livelihoods Specialist Group, IUCN SSC and CEESP.

⁴⁶ Equivalent data for elephant indicated that the minimum expenditure for their adequate conservation was \$215 per square kilometre.

⁴⁷ Leader-Williams, N and Albon, SD (1988) 'Allocation of resources for conservation'. *Nature* 336: 533–5.

useful to repeat this analysis today in the context of high levels of rhino poaching in South Africa. Martin (2003) has modified this rule by linking the expenditure to the size of the area being protected, with larger areas requiring less per unit area than smaller areas⁴⁸. Even with this modification, it is clear that most of southern Africa is spending far less on their protected areas than is required for conservation of elephant and rhino.

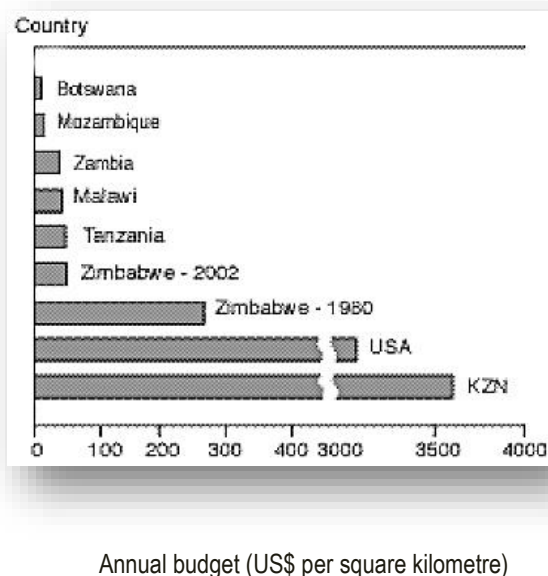


Figure 19. Expenditure on parks in southern African countries compared with that in the USA in 1980 and KwaZulu-Natal (KZN) in 1986 (Cumming 2004)⁴⁹

3.3 PIONEERS OF CONSERVATION

Southern Africa is extraordinarily creative and industrious in conservation having established one of the first national parks to protect wildlife in 1926 and pioneered many other approaches to its conservation subsequently (Box 3). In some of these approaches, such as community-based natural resource management and the wilderness movement, it has influenced the global conservation movement.

Box 3. Southern Africa – Pioneers of Conservation

- Pioneers in early establishment of National Parks;
- Pioneers of CBNRM in its CAMPFIRE programme
- Pioneers in raising conservation awareness with its travelling theatre (Theatre for Africa)
- Pioneers in establishing the international wilderness movement (The Wild Foundation)
- Pioneers of TFCAs as Peace Parks
- Pioneers of DNA profiling to track rhino horn and ivory

Can the region pioneer a successful model of long-term conservation for Africa? Its biggest challenge will be to enable the majority population to develop its own policy for governing wildlife conservation and use – a policy it can identify with and believe in – and then manage its incorporation into mainstream conservation.

⁴⁸ Martin, R.B. (2003). Conditions for effective, stable and equitable conservation at the national level in southern Africa. A paper prepared for Theme 4 at a workshop titled Local Communities, equity and protected areas as part of the preparations for the Vth World Parks Congress of the IUCN held in Durban, South Africa, September 8 – 17, 2003.

⁴⁹ Cumming, D.H.M. 2004. Performance of Parks in a Century of Change. Pages 105-124. In: Child, B. (ed.) Parks in transition: biodiversity, development and the bottom line. Earthscan, London.

4 LESSONS LEARNT AND PROMISING APPROACHES

4.1 LESSONS LEARNT

4.1.1 Relating to Protected Areas

- *PAs have proved the test of time.* Increasingly wildlife populations and fragile habitats have become confined to protected areas within the wider landscape.
- *PAs conserve habitats.* PAs have proved to be more successful at protecting wildlife habitats than conserving large mammal populations. It is because it is easier to apprehend and punish a farmer expanding his agriculture into a park than a hunter who may be operating illegally at night. Conversely, once farmers or herders have established their presence in a park, it may be harder to evict them because squatters can quickly establish political rights to protection.
- *PAs have mixed success at conserving species.* The level of protection that PAs afford wildlife species depends on the quality of management which is in turn closely linked to the level of financial investment in parks. Most countries in southern Africa need to raise their annual investment in PAs if they wish to conserve wildlife and create opportunities for ecotourism and sustainable resource use.
- *Public-Private Partnerships for Failing Parks.* Failed parks with little investment and weak wildlife institutions suffer from agricultural settlement and wildlife collapse. The most successful management option in such cases comes from public-private partnerships in park management with the private involvement of experienced companies and NGOs.
- *Transfrontier approach.* The transfrontier approach to conservation has been accompanied by a conceptual shift away from strictly protected national parks towards greater emphasis on multiple resource use by local communities. Although the approach suffers from bureaucratic delays and problems on the ground, it has been embraced by African Leaders.
- *Research and monitoring services.* Park ecosystems respond to both internal changes, such as disease outbreaks, fire and vegetation succession, and to external changes, including species introductions, climate change and surrounding land-use change. As the pace of change quickens, there is even greater need for high quality research and monitoring services to devise and manage effective conservation responses.
- *Management Information Systems.* Ranger-based management information systems make use of GPS and GIS mapping software to give spatial information on poaching, wildlife signs and ranger effort. Two examples are MIST <www.ecostats.com/web/MIST> & SMART <www.smartconservationsoftware.org/>.

4.1.2 Trade in Wildlife Products

- *Conservation can be assisted by sustainable use and legal trade.* Classic examples are the trade in crocodile skins and vicuña wool. Use tends to be sustainable when the landholder has the full rights to the species; it tends not to be sustainable when products are harvested by bodies that do not have a direct stake in the resource. This approach to conservation requires close monitoring and tight management but can be highly successful.
- *Markets for ivory and rhino horn.* Increased prices of products in existing markets for ivory and rhino horn in China and SE Asia have overwhelmed trade restrictions and law enforcement measures to fuel a new wave of elephant and rhino poaching. It is not possible at present to provide close monitoring and tight management of elephant and rhino populations, or their products, in most of Africa. This means that benefits from legal trade in ivory and rhino horn are restricted to a small handful of countries in southern Africa. Legal trade from countries in southern Africa will almost certainly have adverse effects on the black markets for ivory and rhino horn (procured from wild animals in other parts of Africa) as it opens the door

to endless scams. Nevertheless, the possibility of sharing benefits from legal trade with other rhino range states with different national policies should be investigated.

- *EU beef subsidies.* Subsidies instigated by the European Union for beef imports have proved destructive of migratory wildlife ecosystems.

4.1.3 CBNRM and Conservancies

- *Private conservancies.* Devolution of wildlife rights from government ownership has benefited wildlife populations on private land through establishment of wildlife conservancies that exploit trophy-hunting and tourism opportunities.
- *Communal conservancies.* Lessons from Namibia's conservancy programme include the following: decentralization can bring benefits to wildlife and local economies; targeting the poor to achieve greater equity takes work; land tenure for conservancies remains a challenge; local conservancy committees need to be fully accountable; and building mature institutions takes time.
- *Some Limitations.* In general, CBNRM works less well in regions where population pressure on land is high and governance is weak. Even with favourable conditions, there have been multiple cases of mismanagement, fraud and relatively dysfunction collective governance at the local level, all of which emphasizes the difficulty in establishing transparent collective local government institutions (Abensperg-Traun et al 2011)⁵⁰. Nevertheless there are few alternatives to sustainable resource use in these settings and CBNRM will play a vital role in the long-term conservation of African wildlife. One particular problematic area of conservation in the region that requires successful CBNRM governance is the decline in Miombo forests in rural areas and the unsustainable production of charcoal.

4.1.4 Wildlife Migration and Disease Management

- *Veterinary cordon fencing.* It is widely acknowledged that veterinary cordon fencing has been environmentally damaging especially in relation to wildlife migration. Two international organizations are mandated by the World Trade Organisation (WTO) to provide the standards for food safety and trade in animal commodities and products: The World Organisation for Animal Health (OIE) in Paris which employs the Terrestrial Animal Health Code (TAHC) and the Codex Alimentarius Commission which operates under the United Nations' World Health Organisation and Food and Agriculture Organisation. Many countries have adopted the former TAHC standards which require strict separation of uninfected cloven-hoofed animals from potentially affected populations, usually through fencing.
- *Commodity-Based Trade.* There is a new willingness in both the conservation and livestock sectors of southern Africa to look again at the issue of fencing and to seek environmentally sensitive alternatives for controlling disease. The alternative Codex Alimentarius standards are non-geographic and founded exclusively on management of the risk posed by specific products destined for human consumption. It is referred to as a Commodity-Based Trade (CBT) approach. The FAO has recently contributed to this approach by providing guidelines for risk management of animal diseases along value chains (from 'farm to fork'). Part of the methodology relies on abattoir-based prevention. For instance deboning and removal of lymph nodes from beef renders it a 'very safe' product irrespective of the FMD-status of the locality of production (Thomson et al., 2013b)⁵¹.

⁵⁰ Abensperg-Traun, M., Roe, D. and O'Criodain, C., eds. (2011). *CITES and CBNRM. Proceedings of an international symposium on "The relevance of CBNRM to the conservation and sustainable use of CITES-listed species in exporting countries"*, Vienna, Austria, 18-20 May 2011. Gland, Switzerland: IUCN and London, UK: IIED. 172pp.

⁵¹ Thomson, G. R., M.-L. Penrith, M. W. Atkinson, S. Thawitser, A. Mancuso, S. J. Atkinson, and S. A. Osofsky, 2013b: International trade standards for commodities and products derived from animals: the need for a system that integrates food safety and animal disease risk management. *Transb. Emerg. Dis.* 60, 507–515.

- *Integrated conservation and disease management.* There is an opportunity to jointly develop environmentally sensitive disease control measures that include a number of control measures: (a) CBT; (b) use of geographical barriers, such as mountains, lakes and unsuitable habitats to achieve natural separation of livestock from potential wildlife carriers of disease; (c) vaccines; and (d) certain kinds of control of livestock movements (Ferguson et al 2013)⁵².

4.1.5 Networks and Sharing Skills

- *Networked approaches aid conservation.* A number of disparate networked approaches to wildlife conservation in southern Africa have potential. A small sample includes the CAPE partnership for conservation of the Cape Floristic Region, NASCO – the Namibian Association of CBNRM Support Organisations, and SAWEN – the Southern African Wildlife Enforcement Network. With regard to rhino, SADC Rhino Management Group encourages the direct sharing of knowledge on rhino issues. There is a need for sharing of intelligence information to assist in breaking transnational criminal networks.

4.2 PROMISING APPROACHES

4.2.1 Transfrontier Conservation Areas

4.2.1.1 Background

The Transfrontier Conservation Area is a relatively new conservation paradigm making its debut in Africa with the first Peace Park in 1990. It is defined by the Southern African Development Community's (SADC) Protocol on Wildlife Conservation and Law Enforcement as:

'the area, or component of a large ecological region, that straddles the boundaries of two or more countries, encompassing one or more protected areas as well as multiple resources use areas'

The TFCA is a significant new conservation initiative that combines policies on wildlife conservation, community development and the promotion of culture and peace under one roof. It brings together a complex and diverse mosaic of land uses under one shared or joint management structure. It was given an early endorsement by the late Nelson Mandela, former President of South African and patron of the Peace Parks Foundation:

"I know of no political movement, no philosophy, no ideology, which does not agree with the peace parks concept as we see it going into fruition today. It is a concept that can be embraced by all."

In May 2013 the Honorary Patrons of Peace Parks Foundation were President José Eduardo dos Santos (Angola), President Armando Emilio Guebuza (Mozambique), President Lt Gen. Seretse Khama Ian Khama (Botswana), His Majesty King Letsie III (Lesotho), His Majesty King Mswati III (Swaziland), President Robert Mugabe (Zimbabwe), President Hifikepunye Pohamba (Namibia) and President Jacob Zuma (South Africa).

⁵² Ferguson KJ, Cleaveland S, Haydon DT, Caron A, Kock RA, Lembo T, Hopcraft JG, Chardonnet B, Nyariki T, Keyyu J, Paton DJ, Kivaria FM. 2013. Evaluating the Potential for the Environmentally Sustainable Control of Foot and Mouth Disease in Sub-Saharan Africa.

The 15 Member countries of SADC have now taken the lead in the formal designation, establishment, and political recognition of TFCAs in Africa. With strong political support, TFCAs are increasingly being embraced at all levels of society – local communities, governments, conservation and tourism organizations, bilateral and multilateral aid agencies, the private sector and NGOs (Hanks and Myburgh 2014)⁵³. As of 31 May 2013, SADC had 18 existing and potential TFCAs in various stages of development (Figure 20).

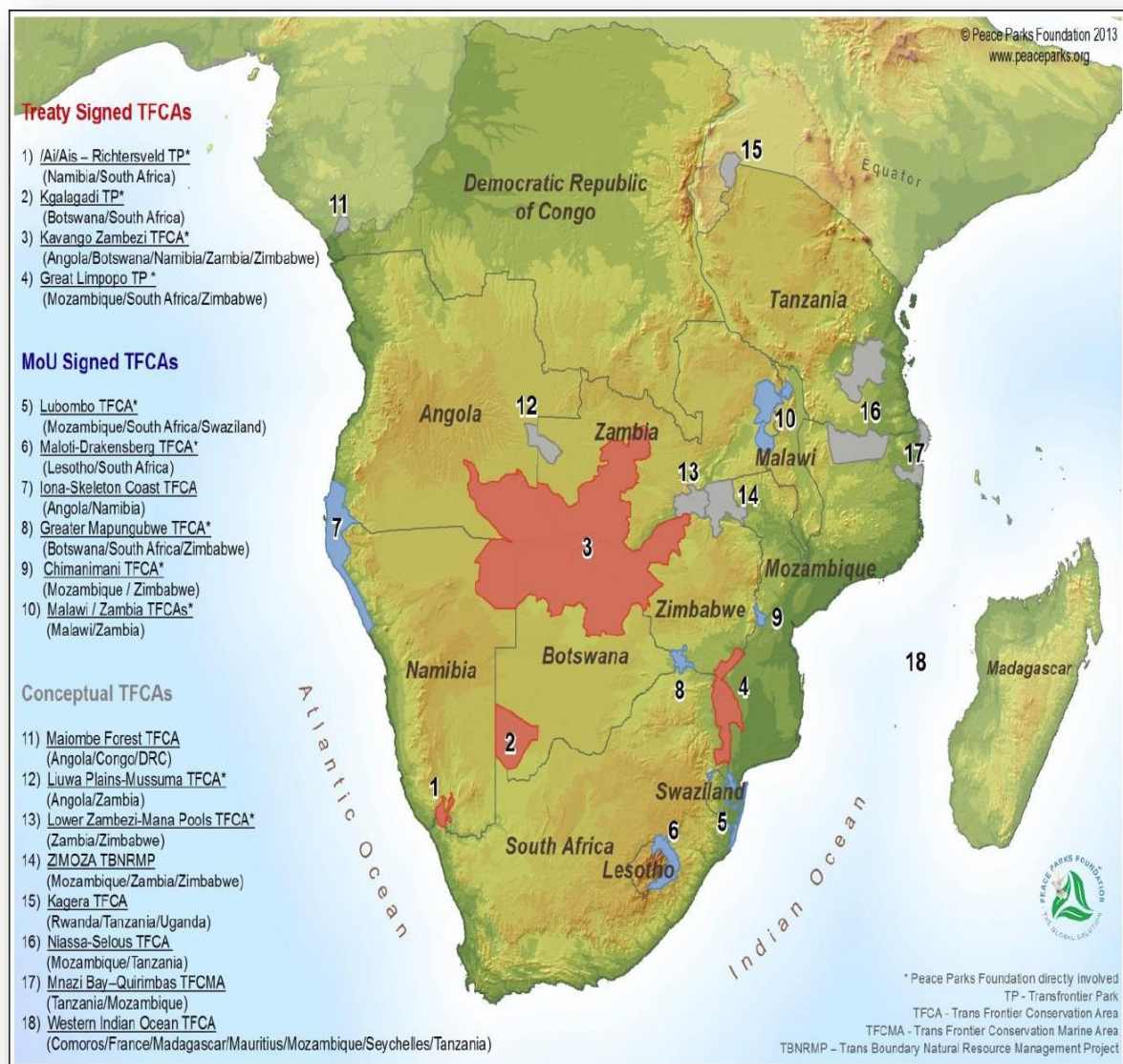


Figure 20. Location of eighteen TFCAs in SADC, May 2013

These TFCAs range in size from the Kavango-Zambezi (KAZA) TFCA of c. 400,000 km² (number 3 on the map) to the Chimanimani TFCA of 2,056 km² (number 9 on the map). As of May 2013 they together covered an area of 1,006,170 km². Information on the sizes and other key features, such as number of protected areas, number of corridors, human population density, and presence of private and/or communal-land conservancies, of fourteen of these TFCAs is presented in Table 8.

⁵³ Hanks, J. and Myburgh, W. (2014). Chapter 9. The evolution and progression of Transfrontier Conservation Areas in the Southern African Development Community. (In press).

Table 8. Size and Key Features of TFCAs in Southern Africa – including protected areas within TFCAs and land-uses outside of protected areas but within TFCAs (from Cumming 2011⁵⁴, Cumming et al 2013⁵⁵).

TFCA	No. Countries	Area km ²	Protected Areas				Land use in Matrix			
			No. State PAs	% of TFCA in State PAs	Shared National Borders	No. Corridors	Human Population Density (people/km ²)	Private and CL Conservancies	Crops	Livestock
1. Kavango-Zambezi	5	400,000	38	22	/	5	<5	+	+	+
2. Niassa –Selous	2	96,200	2	91	-	1	5-25	-	+	-
3. Great Limpopo	3	87,000	5	53	/	1	5-250	+	+	+
4. Kgalagadi TFNP	2	37,256	3	100	+	0	<5	-	-	-
5. Iona—Skeleton Coast	2	32,000	2	100	+	0	<1	-	-	-
6. Mana-Lower Zambezi	2	25,000	9	80	+	0	5-25	-	+	-
7. Drakensberg-Maloti	2	13,000		?	/	0	0-250	-	+	+
8. Liuwa Plain-Mussuma	2	10,000?	1	?	?	0	5	-	?	?
9. Ais-Ais – Richtersveld	2	6,681	2	76	+	0	5	-	+	+
10. Greater Mapungubwe	3	4,872	3	40	/	1	5-25	+	+	+
11. Lubombo	3	4,195		?	/	?	5-250	?	+	+
12. Nyika-Mwaza Marsh	2	4,134	3	70	/	3	<5-	-	+	+
13. Kasungu-Lukusuzi	2	2,316	2	60	-	1	5-250	-	+	?
14. Chimanimani	2	2,056	2	?	+	0	5-250	-	+	+
Total		755,910								

PAs = state protected areas without resident communities*, CL = Communal Lands.

Symbols: - absent or none, + present, / some park boundaries shared across international boundaries, and ? status not known or uncertain..

* The six conservation areas in Angola have resident populations within their borders and are not included in the figure of 38 state protected areas for the KAZA.

The potential for expansion of the TFCA conceptual approach is Pan-African as illustrated by the map of transfrontier areas in Africa (Figure 21). Not all sites illustrated have formal joint-management arrangements. Many NGOs are assisting with TFCA development. IFAW, together with its partner CERU (Conservation Ecology Research Unit at the University of Pretoria, S. Africa), uses an ecological network approach, which essentially bridges the gap between a traditional National Parks approach and a very broad transfrontier conservation approach. Ecological networks may come together to form TFCAs.

⁵⁴ Cumming, D H M (2011) Constraints to Conservation and Development Success at the Wildlife-Livestock-Human Interface in Southern African Transfrontier Conservation Areas: A Preliminary Review. Technical Report to the Wildlife Conservation Society's AHEAD Program. 37 pp.

⁵⁵ Cumming, D. H. M., Dzingirai, V. and de Garine-Wichatitsky (2013). Land and natural resource-based livelihood opportunities in transfrontier conservation areas. In: Andersson, J.A., de Garine-Wichatitsky, M., Cumming, D.H.M., Dzingirai, V. & Giller, K.E. (Eds.) Transfrontier Conservation Areas: People Living on the Edge. London: Earthscan.



Source: Peace Parks Foundation

Figure 21. Map of transfrontier conservation areas and World Heritage Sites in Africa

4.2.1.2 Ecosystem Management and TFCAs

One of the key advantages of the transfrontier approach to conservation is the opportunity to plan and undertake both conservation and development at the scale of landscapes which incorporate entire ecosystems. This enables more effective conservation, more efficient use of natural resources and greater social and economic involvement of communities. Five levels of TFCA management can be recognised.

- *Landscape management for migration*
Conservation at the landscape scale owes much to the application of island biogeography theory. Wildlife corridors are widely advocated as the best way to link fragmented ecosystems or isolated habitats to re-establish ecosystem connectivity. However, the success of these schemes relies heavily on animals

moving either permanently or seasonally between the connected areas. Until recently it was assumed that restoring migrations that had collapsed following construction of fences would prove difficult. Recent evidence indicates that old migratory routes can be re-established by medium-sized herbivores relatively quickly once physical barriers have been removed (Bartlam-Brooks et al 2011)⁵⁶. Use of environmentally-sensitive measures for control of livestock diseases will enable fences to be removed within TFCA allowing wildlife migrations to be reinstated.

- *Landscape management for livelihoods development*

Conservation management at the scale of the landscape aims to take a holistic approach, looking not just at biodiversity issues, but also at the local economy, agriculture, eco-tourism, and the social and health benefits of the environment. Much of this economic growth can be associated with nature-based or wildlife-based tourism, including photo-safari operations and safari hunting. Travel and tourism is the fastest growing industry in the world. It is the foremost job creator of all industries within the SADC region where it is well-placed to maximize foreign exchange earnings and provide new jobs in areas where there is high unemployment, a relatively unskilled labour-force and few alternative sources of employment. Creating easier access for tourists to the various constituent areas making up the TFCA will facilitate regional job creation (Hanks and Myburgh 2014)⁵⁷. Emphasis will be given to land-use planning to minimise conflicts and maximise synergy for development.

- *Water basin management for conservation and development*

Wildlife ecosystems are often part of even larger hydro-ecological systems. The TFCA approach has an important role in contributing to River Basin Management Plans and can play a vital part in protecting water-dependent natural ecosystems.

- *Protected areas management*

In much of Africa, conservation is undermined by poor quality park management that comes about because of inadequate budgets and a lack of suitably qualified and motivated staff. TFCA has the potential to earn considerably greater revenue from increased tourism than if each of the protected areas continued to operate in isolation. If this increased revenue is ploughed back into the areas concerned, then park budgets should be adequate for improved management (Hanks and Myburgh 2014).

- *Promotion of culture and peace.*

Civil unrest which has characterized the life of millions of people in many parts of Africa has a better chance of being reduced when "peace parks" are fully operational. The surrounding communities from a diverse range of nations and cultures are given a new opportunity to co-operate and promote a wide range of economic benefits from within the TFCAs. An active commitment to promote a culture of peace and demilitarisation in these sensitive areas has obvious benefits for all partner countries (Hanks and Myburgh 2014).

⁵⁶ Bartlam-Brooks, H.L.A., Bonyongo, M.C. & Harris, S. (2011) Will reconnecting ecosystems allow long-distance mammal migrations to resume? A case study of a zebra *Equus burchelli* migration in Botswana. *Oryx* 45: 210 – 216.

⁵⁷ Hanks, J. and Myburgh, W. (2014). Chapter 9. The evolution and progression of Transfrontier Conservation Areas in the Southern African Development Community. (In press).

In the marginal drier areas of southern Africa, TFCA development is one of the very few options that offers improved standards of living in the rural community. Perhaps the greatest achievement of TFCAs is the potential it provides for raising the intrinsic value of biodiversity in African society. In the past conservation policy has had little legitimacy in the eyes of the leaders of African states or in those of rural people. TFCAs present wildlife in an exciting new light that is integral to the economics of land-use and vital to the livelihoods of rural people. The transfrontier approach is the one conservation policy in Africa that tries to address multiple issues. It is for this reasons that TFCAs have the potential to spearhead the introduction of a new national commitment to wildlife conservation across Africa.

4.2.1.3 Governance and TFCAs

SADC Member States and SADC Secretariat have gone to great lengths over the past decade to prepare the political basis for cross-border cooperation with regard to natural resources management. A number of regional strategies and programmes, including the Regional TFCA Programme have been developed with the help of German development cooperation to implement SADC Protocols on Forestry, Wildlife Conservation and Law Enforcement. In these strategies and programmes, Member States have identified the priority areas for cross border cooperation which provide the basis for donor support to SADC.

SADC is well positioned to assist Member States in agreeing on Transfrontier Conservation Area boundaries and their operations and maintenance. Some of the key issues regarding Transfrontier Conservation Areas that SADC addresses include:

- Harmonisation of resource mobilisation, policies, and enforcement;
- Promotion of partnerships between public and private sectors; and
- Assessment of capacity building needs.

A criticism frequently voiced over TFCAs is that they suffer from an overly bureaucratic top-down management model which is preventing progress. In fact TFCA governance cannot be the same for every TFCA as the ecological circumstances, government situations and goals of establishment are quite distinct. The most suitable cross-border governance structure will depend on the nature of disturbances. Within a country as well, some actions will work best from the national level and others at a provincial level, some at a policy level and others at a bureaucratic level, some from within the parks and others from outside (Schoon 2008)⁵⁸. Designing and implementing institutional arrangements such as these is difficult and will take knowledge, experience and time. It will also require an adaptive governance approach which can facilitate adjustment to institutions and refinement of policies.

Fortunately considerable experience in TFCA Development and in training of Wildlife Managers has been gained by SADC through the implementation of its regional strategies and programmes in cross-border cooperation over the past 10 years, again with the assistance of German development cooperation. This experience will play a vital role in designing regional programmes for wildlife conservation (Box 4).

⁵⁸ Schoon, M.L. 2008. Building Robustness to Disturbance: Governance in Southern African Peace Parks. Ph.D thesis, Indiana University.

Box 4. Ongoing TFCA support in Southern Africa – potential for synergies

Transboundary Use and Protection of Natural Resources has been a focal area of German development cooperation with SADC since 2009. Funds for natural resource management have also been provided to SADC Member States through German bilateral development cooperation programmes, especially to Namibia, Mozambique, Tanzania, DR Congo and Madagascar. The objective of the current development programme with SADC is to ensure that the “transboundary protection of biodiversity and functional ecosystems as well as the sustainable use of natural resources secure the socio-economic and ecological livelihoods of the local population and of future generations”. This objective harmonizes well with the objective proposed by this study for an EU initiative, viz: “A full suite of viable populations of the magnificent wildlife heritage throughout Sub-Saharan Africa maintained in healthy, functioning and resilient ecosystems supporting livelihoods and human development.”

Financial Cooperation (provided through KfW)

1. Great Limpopo Park

Time Frame: Ongoing until 2018

Budget: 33.9 million EUR

Main areas of support:

- Financial support and TA for the implementation of TFCAs
- Support of development plans, management plans and business plans (including tourism development plans)
- Financing of the implementation of the planning frameworks
- Financing of park protection and anti-poaching activities
- Financing of resettlement activities.

2. Kavango Zambezi Transfrontier Conservation Area (KAZA)

Time Frame: Ongoing until 2020

Budget: 35.5 million EUR

Main areas of support:

- Support for the establishment of TFCA governance structures (KAZA secretariat)
- Support for the establishment of development plans, management plans and business plans (including tourism development plans and integrated regional planning frameworks)
- Investments in park infrastructure
- Streamlining of tender procedures for investments
- Development of partnerships with private sector and civil society.

3. Malawi-Zambia Transfrontier Conservation Area

Time Frame: 2014 – 2019 (in preparation)

Budget: 18 million EUR

Main areas of support: to be defined.

4. Training of Wildlife Rangers and Managers in the SADC region

Time frame: 2014 – 2018

Budget: 10 million EUR

Main areas of support:

- Establishment and improvement of infrastructure and equipment for mobile, decentralized training units to widen the regional training offered
- Financing of the upgrading of the Southern African Wildlife College, to provide sustainable and cost efficient training for wildlife managers in the region
- Establishment of a mechanism for grants to strengthen access to training by park management of TFCAs and neighbouring CBOs.

The identified support is based on a training needs assessment conducted by German development cooperation in 2012/13 for the Southern African region which identified training needs for different wildlife management functions in a range of about 60 million EUR.

5. Support to the Southern African Wildlife College (SAWC)

Time Frame: finalized

Budget: 5.1 million EUR

Main areas of support:

- Support to the environment-friendly construction of the SAWC
- Support to an integrated implementation approach (collaborative planning and implementation)
- Financing of bursaries for female students.

Technical Cooperation (provided through GIZ)

1. Sustainable Forest Management and Protection in the SADC Region

Time Frame: 1996-2012 (finalized)

Budget: 9.6 million EUR

Main areas of support:

- Development and implementation of strategies for income generation from forests in 4 SADC countries (MOZ, MAL, NAM and BOT)
- Development of regional strategies and programmes for the implementation of the Forestry Protocol as well as the Protocol on Wildlife Conservation and Law Enforcement (Forestry Strategy 2010, Regional TFCA Programme 2013, SADC Programme on Cross-border Fire Management 2010, regional REDD Programme 2010, FLEGT programme 2013).
- Support to the positioning for the international dialogue on Climate Change

2. Transboundary Use and Protection of Natural Resources in the SADC Region

Time Frame: Ongoing 2012-2018

Budget: 13 million EUR

Main areas of support:

- Implementing the Regional TFCA Programme:
 - diversifying financing mechanisms for selected TFCAs (private sector involvement, international biodiversity and climate change funds, financing mechanism)
 - enhancing information exchange between stakeholder groups, TFCAs and SADC Secretariat (establishment of a TFCA Network and a web portal for virtual information and best practice exchange and data management, training for network members and SADC Secretariat, developing regional guidelines for TFCA management)
 - generating best practices for cross-border income generation with communities (3 pilot projects for cross-border tourism and other measures)
 - reducing vulnerability of ecosystems and communities to the effects of climate change (training and 2 pilot projects on cross-border CC adaptation measures)
 - developing and implementing mobile (on site) training for 6 TFCAs on TFCA relevant (cross-border) issues (veterinary, poaching, border control, etc.)
- Implementing the regional Programme on Cross-border fire Management
 - Documenting of best practices and experiences on community based fire management
 - Generating best practices for cross-border fire management with communities and park management (pilot projects in 4 TFCAs)
 - Establishing regional training on integrated fire management with a focus on cross-border fire management with Regional Centres of Excellence)
- Implementing the Regional REDD Programme
 - Establishing regional training on Reducing Emissions from Deforestation and Forest Degradation (REDD)
- Strategy development support to SADC Secretariat and Member States
 - Developing a regional strategy on Green Growth
 - Developing a regional Climate Change Strategy.

In designing a Support Programme for TFCAs (Section 5.1), governance needs to be programmed at three levels: (a) Site-Level governance is concerned with institutions representing the protected areas and surrounding communities and landholders; (b) Country-Level support will provide assistance for government institutions to enable reforms and capacity-strengthening at national level; and (c) Regional-Level support will assist SADC and NEPAD in offering legal and policy expertise to member states.

4.2.1.4 KAZA – The Kavango Zambezi TFCA

The Kavango-Zambezi Transfrontier Conservation Area is so exceptional in terms of its size and diversity of natural resources that it has become the flagship transfrontier area for Africa. It covers an area of c. 400,000 km² – an area slightly larger than that of Zimbabwe and four times the size of Malawi. The Victoria Falls forms a well-known central point in the TFCA and is near the meeting point of four of the five participating countries (Angola, Botswana, Namibia, Zambia, and Zimbabwe). Two major river basins, the Zambezi and the Okavango contribute major wetlands, including the Okavango Swamps, to the generally flat to gently undulating landscapes. KAZA also encompasses large areas of the Miombo-Mopane and the Kalahari-Namib Wilderness Areas (Figure 22).

There are more than 70 protected areas within the KAZA TFCA that range in size from 22,000 km² (Kafue National Park) to 19 km² (Victoria Falls National Park). These protected areas cover a range of types and purposes from strict national parks under state control (of which there are 17) to multiple use areas under community management (Cumming 2008)⁵⁹. The Mosi-oa-Tunya / Victoria Falls is a World Heritage Site and the Okavango Delta has recently been listed as a second one.

KAZA provides one of the last true wilderness regions in Africa where migratory wildlife populations can move across international borders between their wet and dry season ranges. The northern conservation area of Botswana (NCA) is a vast wilderness made up of national parks and wildlife management areas totalling an area of > 80 000 km² and supporting the largest elephant population on earth of around 150 000 - 200 000 individuals. In addition, the NCA supports four distinct zebra migrations (Bartlam-Brooks et al. 2011⁶⁰; RWS Fynn pers comm.). Many buffalo herds forage in the woodlands on the Botswana side during the wet season but move across the border into the Namibian side of the Linyanti Swamps during the dry season (Fynn et al. in press⁶¹).

⁵⁹ Cumming, D.H.M. 2008. Large Scale Conservation Planning and Priorities for the Kavango-Zambezi Transfrontier Conservation Area. A report prepared for Conservation International.

⁶⁰ Bartlam-Brooks, H.L.A., Bonyongo, M.C. & Harris, S. (2011) Will reconnecting ecosystems allow long-distance mammal migrations to resume? A case study of a zebra *Equus burchelli* migration in Botswana. *Oryx* 45: 210 – 216.

⁶¹ FYNN, R. W. S., CHASE, M. & RODER, A. Functional habitat heterogeneity and large-herbivore seasonal habitat selection in northern Botswana. *Sth. Afr. J. Wild. Res.* In press.

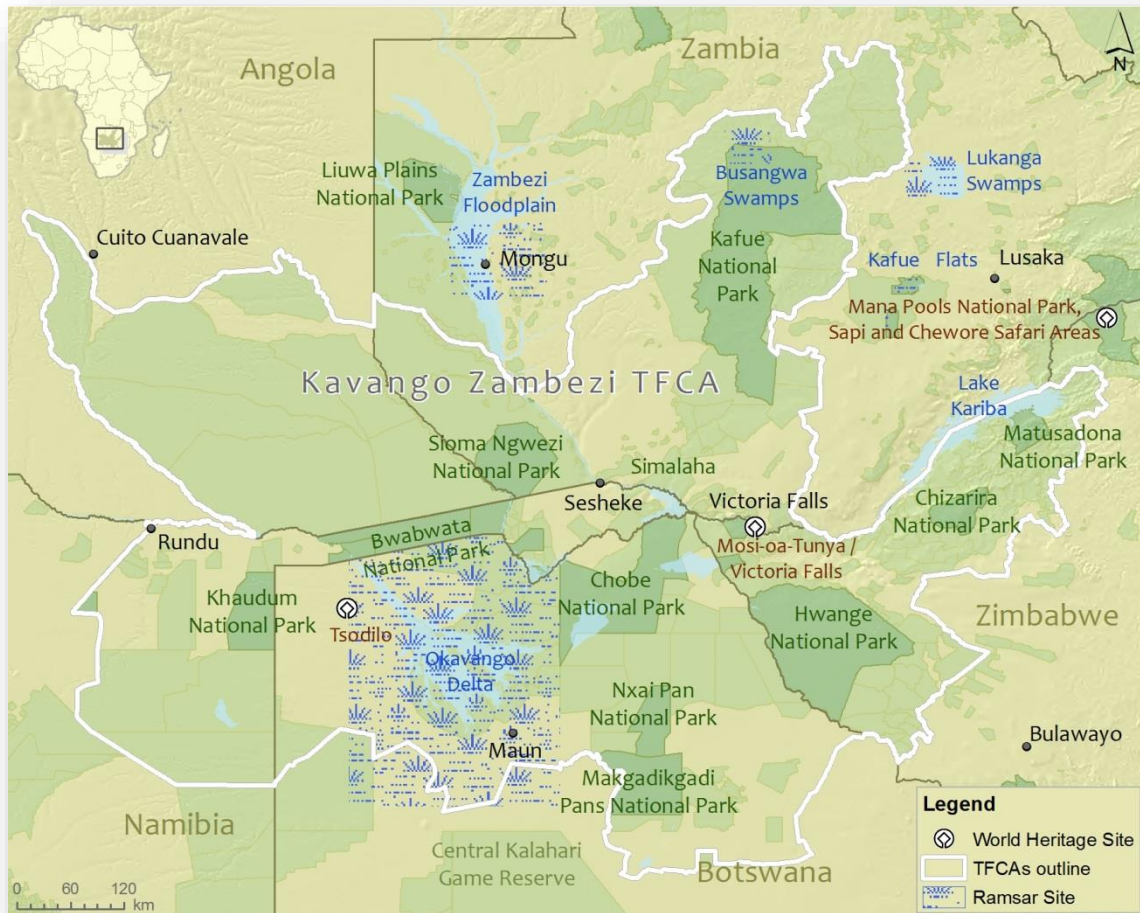


Figure 22. The Kavango Zambezi TFCA (from Peace Parks Foundation)

Similarly most of the Chobe River Fronts zebra population relies upon floodplains on the Namibian side. Additionally, collared elephant herds move from Botswana, through Namibia and well into Angola (Mike Chase, unpublished data). The region carries two globally threatened large mammals (black rhinoceros and wild dog), several endemic species of plants, reptiles and amphibians, one endemic mammal and one endemic bird species. The TFCA includes a human population in the region 1.5 million people but large areas carry population densities of less than 5 people per km².

4.2.1.5 Priorities for Development

The mission of the participating countries, expressed in their December 2006 MOU, is:

“To establish a world-class transfrontier conservation area and tourism destination in the Okavango and Zambezi river basin regions of Angola, Botswana, Namibia, Zambia and Zimbabwe within the context of sustainable development.”

And the primary objectives are to:

- a. *“Foster trans-national collaboration and co-operation in implementing ecosystems and cultural resource management;*
- b. *Promote alliances in the management of biological and cultural resources and encourage social, economic and other partnerships among their Governments and stakeholders;*
- c. *Enhance ecosystem integrity and natural ecological processes by harmonizing natural resources management approaches and tourism development across international boundaries;*

- d. *Develop mechanisms and strategies for local communities to participate meaningfully in, and tangibly benefit from, the TFCA; and*
- e. *Promote cross-border tourism as a means of fostering regional socio-economic development.”*

The following four ‘large-scale’ priorities require reform, support and investment:

1. Water flows and wetlands.

The centre piece of the KAZA TFCA is its wetlands. These are focal areas for a large part of the human population residing in the TFCA. They support a wide range of important wetland-dependent species and play a key role in the region’s tourism development. But the wetlands within KAZA are vulnerable not only because of impending climate change but also because they depend on water derived from distant highlands. These are large-scale, multi-faceted and complex issues that will require investment and long term commitment by governments, donors, NGOs and civil society (Cumming 2008)⁶².

2. Natural resource governance

The dominant form of land use in the KAZA TFCA is subsistence agriculture under communal tenure in nutrient poor, mostly semi-arid systems. The potentially rich biodiversity of the area and its wetlands are undervalued, mostly because those living on the land are unable to realize the full value and benefits of this rich heritage. This is very largely a result of inappropriate institutions governing resource access rights and benefits streams, and associated mismatches between social and ecological scales. The success of the KAZA

TFCA as a conservation and development initiative rests squarely on the extent to which rural communities will benefit from wildlife-based land uses. Reforms in tenure and resource access rights will be crucial to the sustainability of the KAZA TFCA (Cumming 2008).

3. Biodiversity linkages and conservation planning

The broad-scale southwest-northeast rainfall and biodiversity gradients in the KAZA region indicate how habitats may change along these gradients under climate change. Associated with these projected changes will be the need to maintain ‘adaptive response corridors’ along these biodiversity gradients. Investment and support is required for development of conservation assessment and planning in KAZA (Cumming 2008).

4. Information and participatory science

Little current, sound information is available and accessible on a wide range of topics for the KAZA TFCA. Major gaps that need to be filled include the current distribution and status of plant and vertebrate taxa throughout the TFCA, but particularly in Angola and Zambia. The status of the few endemics, particularly the herpetofauna, urgently needs to be assessed.

Information on protected areas (check lists, numbers or status, distribution, habitats, budgets, staff levels, etc.) is not generally available. The setting up of an open web-based but quality controlled “Wiki” directory on the protected areas in the KAZA region may assist in filling many of the gaps. Similar gaps exist in the information base on forest areas and on ecosystem services throughout the KAZA region. The development of a more participatory culture between governments, NGOs, the private sector, universities and research departments, and the range of stakeholders living within the TFCA is urgently needed (Cumming 2008).

⁶² Cumming, D.H.M. 2008. Large Scale Conservation Planning and Priorities for the Kavango-Zambezi Transfrontier Conservation Area. A report prepared for Conservation International.

The signing of an MOU by five participating countries to establish KAZA TFCA provides a unique window of opportunity through which to explore and develop innovative approaches to conservation in large landscapes in the region – it is an opportunity that should be seized by all involved and supported by the international community.

4.2.1.6 Constraints on Development of TFCAs

The potential of TFCAs as a driving force behind conservation and natural resource-based livelihoods is easily appreciated; bringing this vision to fruition is a much harder task. Most TFCAs in Southern Africa are situated in marginal land in terms of productivity and services. Were it not so, these areas would long ago have been settled and used for agriculture. Without change, the future may be one of increased conflict and marginalisation of the inhabitants. On the other hand, these areas might give rise to diverse natural resource-based enterprises that enrich the lives of residents. It has been shown that the most profitable form of land-use in the TFCAs is a combination of wildlife-based tourism and full diversification of natural resource-based enterprises. The various enterprises include non-consumptive tourism, safari hunting, the sustainable harvesting of meat, crafts and non-timber forest products, and the provision of ecosystem services such as water and carbon sequestration.

The bottom line is that unless those living in marginal areas benefit from conserving wild natural resources, TFCAs are unlikely to work as sustainable multiple-use zones. Not only that, but the long-term future of the core protected areas and their large mammal populations, is likely to be compromised (Cumming et al 2013)⁶³.

A recent assessment of conservation and development in TFCAs found that many of the core protected areas were inadequately funded and faced ongoing declines in several large mammals and, at the same time, the integration of agriculture and natural resource management was problematic (Cumming 2011)⁶⁴. A number of constraints were holding back progress significantly. They operated at three scales. The first scale, or level, was that of international laws and conventions, and national management capacities. The second level was at the TFCA scale and included those constraints that confronted resource managers. The third scale was at the local level, within TFCAs, at the wildlife-livestock-human interface. These constraints are summarised in Cumming (2011).

4.2.2 Public-Private Partnerships for Park Management

Through partnerships with wildlife authorities, African Parks Network and other non-state actors take on the primary responsibility for managing protected areas. In the southern region, African Parks is currently managing Bangweulu Wetlands and Liuwa Plain National Park in Zambia and Majete Wildlife Reserve in Malawi.

Frankfurt Zoological Society is operational manager of the North Luangwa National Park and surrounding GMAs where they are developing resource protection, institutional mechanisms, governance arrangements and revenue sharing policy for wildlife management in the community areas. They assist with law enforcement and park management in Gonarezhou National Park in Zimbabwe.

Wildlife Conservation Society co-manages Niassa Reserve in northern Mozambique with the Ministry of Tourism.

4.2.3 Conservancies

⁶³ Cumming, D. H. M., Dzingirai, V. and de Garine-Wichatitsky (2013). Land and natural resource-based livelihood opportunities in transfrontier conservation areas. In: Andersson, J.A., de Garine-Wichatitsky, M., Cumming, D.H.M., Dzingirai, V. & Giller, K.E. (Eds.) Transfrontier Conservation Areas: People Living on the Edge. London: Earthscan.

⁶⁴ Cumming, D H M (2011) Constraints to Conservation and Development Success at the Wildlife-Livestock-Human Interface in Southern African Transfrontier Conservation Areas: A Preliminary Review. Technical Report to the Wildlife Conservation Society's AHEAD Program. 37 pp.

In many parts of southern Africa, a large fraction of the human inhabitants are poor, rural, semi-subsistence agriculturalists who depend heavily on natural resources for their livelihoods including wildlife, wood products such as firewood and charcoal, NTFPs and water. These conditions have led to the development of institutions and programmes supporting community-based natural resource management and sustainable uses of natural resources, such as CAMPFIRE in Zimbabwe, ADMARE in Zambia, NRMP-Botswana, and Namibia's communal conservancies (Section 2.1.5).

They aim has been to provide a regulatory framework to enable communities and investment partners to commit to wildlife business and enterprises which are based on sustainable management of natural resources. In the case of Namibia's conservancies, lessons were learnt from CAMPFIRE and ADMARE and a deliberate effort was made to avoid predetermined administrative boundaries. This helped reinforce devolution of wildlife-use rights and benefits to community level.

The first four communal conservancies were registered in 1998 – a little over a decade later, 64 registered conservancies serve one in four rural Namibians. Total income from CBNRM to rural Namibians has grown to well over N\$ 42 million in 2009.

As mentioned in Section 4.1.3, there have been many cases of mismanagement of CBNRMs and dysfunctional governance. The work can be difficult and results may not be achieved overnight but ultimately CBNRM is about increased democracy, improved governance and increased local rights.

4.2.4 Awareness-Raising

One of the goals of wildlife conservation in southern Africa is to develop a land ethic in society that is centred on sustainable use of natural resources and an appreciation of cultural and aesthetic values of biodiversity. Awareness-raising programmes inform the public about wildlife values and issues by tailoring information, interpretative materials and media communications at specific sectors of society. The key to this approach is to understand the needs of each sector.

4.2.4.1 Access to Protected Areas

The great majority of African children know almost nothing about the national parks or wildlife of their country. Even if they live near to a national park, few can afford the entry fees. For children who are citizens and aged between five and sixteen, the price of entry to South African parks is 15 to 35 rand (1.1 - 2.7 euro). It is similar in East Africa where entry to Kenyan parks is 200 shillings (1.70 euro). Yet a typical rural kid might not even have 10 shillings to spend. This entry fee obviously excludes the cost of transport and accommodation costs. This barrier contributes to a lack of awareness of wildlife values. In combination with rural poverty, it is an effective training for generation after generation of poachers.

Information on wildlife that is on offer in African schools (if indeed there is any on offer) does not address this problem and it tends to be disconnected from people's real lives. This is particularly apparent in rural locations as the school curriculum often promotes suburban and materialistic values which have most relevance to children of the emerging middle classes. A boy from the rural community aged eight today will be twenty by the time this wildlife strategy has been fully implemented. By that time he will probably be a hunter and may well be tempted to poach wildlife.

4.2.4.2 Wildlife Education

Lack of awareness about wildlife heritage extends to the educated and political classes. Only a minority, mainly wildlife professionals and bird-enthusiasts, are well-informed about wildlife issues and express strong interest in wild animals. Unfortunately this indifference to wildlife heritage has extended in the past to political leaders who, with a few notable exceptions, seldom express much interest in wildlife heritage or consider the environment in their development plans (UNEP 2003)⁶⁵. Without political leadership on wildlife conservation, corruption has become a major force across the continent; it undermines environmental equity and destroys ecosystems. Conservation projects keep failing because of this one paired issue (indifference and corruption). Many factors contribute but inadequate education, understanding, and positive role models at an early age are surely key factors.

Nevertheless, there are indications of a new vision of wildlife and biodiversity emerging in southern Africa and other regions that recognizes the value of wildlife and wild ecosystems to African society (Box 5). There are also signs that governments wish to integrate wildlife into their national and regional development plans.

Box 5. Vision for African Wildlife

Visions of the Future

The survival of our wildlife is a matter of grave concern to all of us in Africa. These wild creatures amid the wild places they inhabit are not only important as a source of wonder and inspiration, but are an integral part of our natural resources and our future livelihood and well being.

—Julius K. Nyerere, 1961

I know of no political movement, no philosophy, no ideology, which does not agree with the peace parks concept as we see it going into fruition today. It is a concept that can be embraced by all. In a world beset by conflicts and division, peace is one of the cornerstones of the future. Peace parks are a building block in this process, not only in our region, but potentially in the entire world.

—Nelson Mandela, 2001

The preservation of biodiversity is not just a job for governments. International and non-governmental organisations, the private sector and each and every individual have a role to play in changing entrenched outlooks and ending destructive patterns of behaviour.

—Kofi Annan, 2003

Natural capital – our ecosystems, biodiversity, and natural resources – underpins economies, societies and individual well-being. The values of its myriad benefits are, however, often overlooked or poorly understood... We are running down our natural capital stock without understanding the value of what we are losing. The rural poor, most dependent on the natural resource base, are often hardest hit.

—Ellen Johnson Sirleaf, 2012

⁶⁵ UNEP 2003. Action Plan for the Environment Initiative of the New Partnership for Africa's Development (NEPAD).

An effective education in conservation imparts knowledge and know-how on wildlife and its management. It can teach children about the place of wildlife in nature and the role of nature in providing services – including ecosystems, food chains and the web of life. It can also teach about practical and economic uses of wildlife in rural communities, sustainable and unsustainable forms of use, methods to mitigate human-wildlife conflicts, aesthetics and the part that wild animals play in cultural traditions and in the tourism industry. Conservation education can continue from primary level to high school. Education in wildlife can also be reinforced by wildlife clubs and sponsored visits to protected areas.

4.2.4.3 *Wildlife Clubs*

The creative enterprise shown by wildlife education programmes is extraordinary: travelling theatres from South Africa, singers from Mali, art competitions, story-telling, school visits from Europe or elsewhere, meet-the-ranger days, and so forth. The wildlife clubs around a TFCA or national park can be linked through joint park visits, competitions and get-togethers. There can be national club days and other events. The underlying principle is simple: if greed, ignorance and carelessness are the underlying drivers of biodiversity decline, then an education programme that fosters awareness, understanding and care has to be one of the main tools in preventing biodiversity declining over the long-term.

4.2.5 **Council of Elders for the Environment (CEE)**

Africa has its own powerful social mechanism for countering antisocial behaviour that is based on meetings of elders. This cultural tradition could be organized in the service of a land ethic to provide sustainable use of natural resources and conservation of wildlife heritage. The CEE will bring elders and leaders together in a circle, as in a traditional village meeting, where anyone can speak and be heard. Its purpose will be to increase transparency of land- and resource-based decisions and allow a greater opportunity for communities (at grassroots level) to air their issues and listen to the environmental case. Councils will convene at multiple levels from district to national and regional levels but with a focus on TFCAs and protected areas. Adopting a traditional open and inclusive style of discussion, the main purpose of the Council of Elders will be to come up with a genuine land and wildlife ethic that matches the expectations and needs of people in rural communities and which reflects a broader perspective than that of the market economy alone.

The strategy envisages a programme of awareness-raising that casts light on the main social drivers underlying the wildlife crisis – poverty combined with lack of opportunity in rural communities and indifference in educated and political classes arising from their historic exclusion from parks and loss of cultural traditions (Section 5.5).

5 INDICATIVE CONSERVATION ACTIONS

In parts of Southern Africa, the rural population is beginning to view national parks and wildlife with a sense of pride thanks to enlightened land-use policies that provide communities with certain resource rights. Many wildlife professionals in the region view ‘conservation of wildlife’ and ‘rural economic development’ as synergistic and co-dependent on sustainable management of natural resources.

In developing this strategic approach to long-term wildlife conservation, arguments have been presented that justify the need to focus support on world-class management services for a small number of key conservation areas. A Key Landscape for Conservation (KLC) should have the capacity to sustain viable populations of large African wildlife species within a functioning ecosystem. At the same time, it should act as focus in developing the rural economy through sustainable use of natural resources. A suitable network of KLCs has the potential to protect the well-known wildlife species of the region within natural ecosystems and to stimulate rural economic growth.

The TFCA approach explored in Section 4 encompasses this dual concept for KLCs. It recognizes that conservation-related industries within TFCA are likely to have higher economic returns than agricultural activities in many parts of the region. Furthermore by cultivating a context for socio-economic engagement with wildlife, it offers the prospect of a resurgence of culturally-creative, wildlife heritage that is uniquely African.

The outline of a plan to develop TFCA for integrated socio-economic and wildlife-conservation benefits is presented in Section 5.1. Other components of the strategic approach are then given: conserving Independent Conservation Areas of outstanding value (Section 5.2); reforming wildlife institutions (Section 5.3); countering poaching and dismantling wildlife networks (Section 5.4); and reforming education and raising awareness (Section 5.5).

5.1 KEY LANDSCAPES FOR CONSERVATION: (I) TFCA

Many Transfrontier Conservation Areas are ideal candidates for selection as KLCs. Support for TFCA that are selected will take place at three levels. Site-Level support will target the protected areas and surrounding communities. Country-Level support will provide assistance for government institutions to enable reforms and capacity-strengthening. Regional-Level support will assist SADC and NEPAD in offering legal and policy expertise to member states wishing to conserve wildlife and develop natural resources within the TFCA framework. The following conservation actions for developing TFCA as Key Landscapes for Conservation are recommended.

5.1.1 Site Level

This support is aimed at the conservation areas and their surrounding communities.

5.1.1.1 Selection of Key Landscapes for Conservation (KLCs)

TFCA have been adopted as a model for development of conservation areas in the Southern African region in recognition of the opportunity they offer for ecosystem-scale conservation, integrated CBNRM and cultural engagement with wildlife. Selection amongst TFCA for inclusion in the list of Key Landscapes for Conservation (KLCs) in Southern Africa will depend on the match with ecological, socio-economic and conservation criteria (Box 6). A suitable procedure will bring together independent experts and country representatives in SADC to prioritise KLCs from a list of candidate areas. Suggestions for TFCA that could be included in this KLC list are given in Table 9 and their locations are indicated in Figure 23.

Box 6. Criteria for identifying Key Landscapes for Conservation (KLC)

KLCs – Key Landscapes for Conservation are areas recognized to be of global wildlife importance with intact ecosystems capable of sustaining wildlife populations in the face of increasing isolation from other similar areas. The following criteria are a guide to identifying potential new KLCs. It is not necessary for all criteria to apply to any one candidate KLC. Possession of one or more criteria does not automatically qualify an area as a KLC.

- Established as a Transfrontier Conservation Area or in the process of formal development as a TFCA.
- Recognised as a World Heritage Site for its global (scientific) importance.
- Protects a functioning ecosystem with viable wildlife populations in the face of increasing isolation caused by an expanding rural population.
- Protects a globally important dry-season concentration area for wildlife populations together with their wet-season dispersal zones.
- Protects a long-distance terrestrial wildlife migration, or the range occupied historically by such a migration where there is opportunity to recover that migration through barrier removals.
- Protects an important population of free-ranging elephants in Southern Africa
- Protects an important population of African black rhino or Southern White Rhino.
- Protects a key population (as rated by the appropriate IUCN SSC Specialist Group) of one or more of the other large African wildlife species, including predators, primates and ungulates, which are categorised as endangered or vulnerable according to IUCN Red List Criteria. Particular attention should be given to species that typically occur at low density and/or occupy large home ranges, and which consequently require large and intact ecosystems for sustaining their free-ranging populations.
- Protects an important wintering ground for Palearctic bird migrants (eg wetlands recognised as Important Bird Areas – IBA).
- Protects a regionally important hotspot of endemism and diversity that requires ecosystem-scale (versus microhabitat-scale) protection.
- Contains wildlife landscapes of exceptional scenic interest.
- Protects a watershed or aquifer that has direct conservation benefit through tight linkages with downstream water-dependent ecosystems that are themselves of global importance.
- Plays a vital role in sustaining a key natural resource, such as a fishery or source of freshwater, that has critical national importance through public, commercial, recreational, artisanal or subsistence use.

Table 9. Key Landscapes for Conservation (KLC) identified as priorities under the current review

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
Southern Africa					
Kavango Zambezi TFCA	AO, NA, BW, ZM, ZW	400,000	<ul style="list-style-type: none"> Miombo woodland Zambezian flooded grasslands Savanna 	<ul style="list-style-type: none"> Liuwa Plains NP (Zam) Kafue NP (Zam) Matusadona NP (Zim) Chizarira NP (Zim) Hwange NP (Zim) Naxai Pan NP (Bot) Chobe NP (Bot) Moremi GR (Bot) Okavango Delta WHS 30 additional reserves 	Wildlife migrations Large elephant population Other large mammals are abundant Unique Okavango Delta listed on World Heritage List Peace Park
Great Limpopo TP	MZ, ZA, ZW	37,572 (phase 1)	Miombo woodlands	<ul style="list-style-type: none"> Limpopo NP (Moz) Kruger NP (SA) Gonarezhou NP (Zim) 2 additional sanctuaries & further PAs in phase 2 	Riverine woodlands Regional endemism
Kgalagadi TP	BW, ZA	33,551	Desert (Kalahari)	<ul style="list-style-type: none"> Gemsbok NP (Bot) Kalahari Gemsbok NP (SA) 1 additional reserve 	Unique Kalahari ecosystem Gemsbok, springbok, blue wildebeest, eland and red hartebeest Cultural importance (San and Mier) Peace Park
Lower Zambezi – Mana Pools TFCA	ZM, ZW	17,745	Miombo woodlands Riparian woodlands Wetlands	<ul style="list-style-type: none"> Mana Pools NP (WHS), Sapi and Chewore Safari Areas (Zim) Lower Zambezi NP (Zam) 6 additional reserves 	Zambezi River Floodplain Escarpment Large mammal populations 350 bird species
Maloti-Drakensberg TFCA	LS, ZA	14,740	Montane	Maloti Drakensberg Transboundary World Heritage Site comprising Sehlabathebe NP (Les) and uKhahlamba Drakensberg NP (SA)	Southern mountains Escarpments Rich endemic flora Wetlands San culture
Ais-Ais – Richtersveld TP	NA, ZA	5,920	Desert, Arid Mountain	<ul style="list-style-type: none"> Ai-Ais Hot Springs Game Park (Nam) 	Fish River Canyon Centre of floral diversity

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
			Deep canyon	<ul style="list-style-type: none"> Richtersveld NP (SA) 	Cultural history
Lubombo TFCRA	MZ, ZA, SZ	10,029	Coastal plain Riverine forest Bushveld	<ul style="list-style-type: none"> Links 5 TFCA projects Hlane Royal NP (Swa) Tembe Elephant Park (SA) Maputo Special Reserve (Moz) 12 state PAs and other reserves and private land 	High biodiversity 5 Ramar sites Marine TFCA Cultural history
Chimanimani TFCA	MZ, ZW	2,056	Mountains and miombo woodlands	Chimanimani NP (Zim) and Chimanimani NR (Moz)	Forest, scenery, wildlife, endemic plants and culture
Malawi / Zambia TFCA	MW, ZM	4,134 (phase 1)	Montane grassland and wetlands	3 PAs including Nyika National Park (Mal) and Vwaza Marsh Wildlife Reserve (Zam)	Montane grassland & flora Wetlands Restocking programme
Maiombe Forest TFCA*	AO, CG, DRC	to be defined	Tropical rainforest	Dimonika Biosphere Reserve (Congo), Luki Forest Biosphere Reserve (DRC) and 6 other reserves with little protection in practice	South-western part of Congo Basin rainforest; Chimpanzees & lowland gorillas
Niassa – Selous TFCA*	MZ, TZ	96,200	Dry forest (miombo)	Selous Game Reserve (WHS) (Tan) Mikumi NP (Tan) Niassa Game Reserve (Moz)	Wide variety of wildlife habitats Large mammal populations important for elephant, hippo, buffalo, sable and wild dog. Migration corridor with village wildlife management areas
Etosha Pan NP	NA	22,750	Desert, salt pans	Etosha Pan NP	Unique salt pans, waterholes, black rhino, elephant, springbok, gemsbok, etc.
North Luangwa NP	ZM	4,636	Miombo and Mopane woodlands Riverine forest	North Luangwa NP	Luangwa River and floodplain Woodlands, Escarpment Large mammal populations including black rhino
South Luangwa NP	ZM	9,050	Miombo, Zambezian and Mopane woodlands Riverine forest	South Luangwa NP	Luangwa River and floodplain Woodlands, Escarpment Large mammal populations
Central Kalahari GR	BW	52,800	Bushland Grassland	Central Kalahari GR	Bushland and grassland over Kalahari Sands; Large mammal populations Traditional home of Bushmen, or San
Mountain Zebra NP	ZA	284	Grassland Dry shrubland	Mountain Zebra NP	Cape mountain zebra (endangered) Other large mammals
Cangandala-Luando Protected Areas	AO	9,366	Miombo	Cangandala National Park and Luando Strict Nature Reserve	Last refuge of Giant Sable; other large mammals of miombo

Name of proposed KLC	Countries (ISO2 code)	Size (km ²)	Ecotype/biome	Protected areas	Special features/significance
Iona—Skeleton Coast	NA, AO	32,000	Desert	Iona NP (Ang) and Skeleton Coast NP	Unique ancient coastal desert
Cape Floral Region Protected Areas	ZA	c. 2,000	Fynbos	8+ PAs including Cape Peninsula NP and De Hoop NR. A process is underway for proclamation of 'Cape Floral Region PAs' as a WHS.	Cape Floral Region is one of the world's 18 biodiversity hot spots; 69% of the estimated 9,000 plant species in the region are endemic; 1,435 species identified as threatened
Lakes Tanganyika and Malawi*	BI, DRC, TZ, ZM, MZ	63,000	Freshwater lakes	<ul style="list-style-type: none"> • Mahale Mountains NP (Tan) • Gombe Stream NP (Tan) • Sumbu NP (Zam) • Lake Malawi WHS/NP (Mal) 	Endemic fish fauna
Madagascar forests	MG	c. 2,000	Humid to dry forests	16 (2 World Heritage Sites)	Lemurs and other endemic fauna and flora
Southern Africa total		655,260		114 (6)	

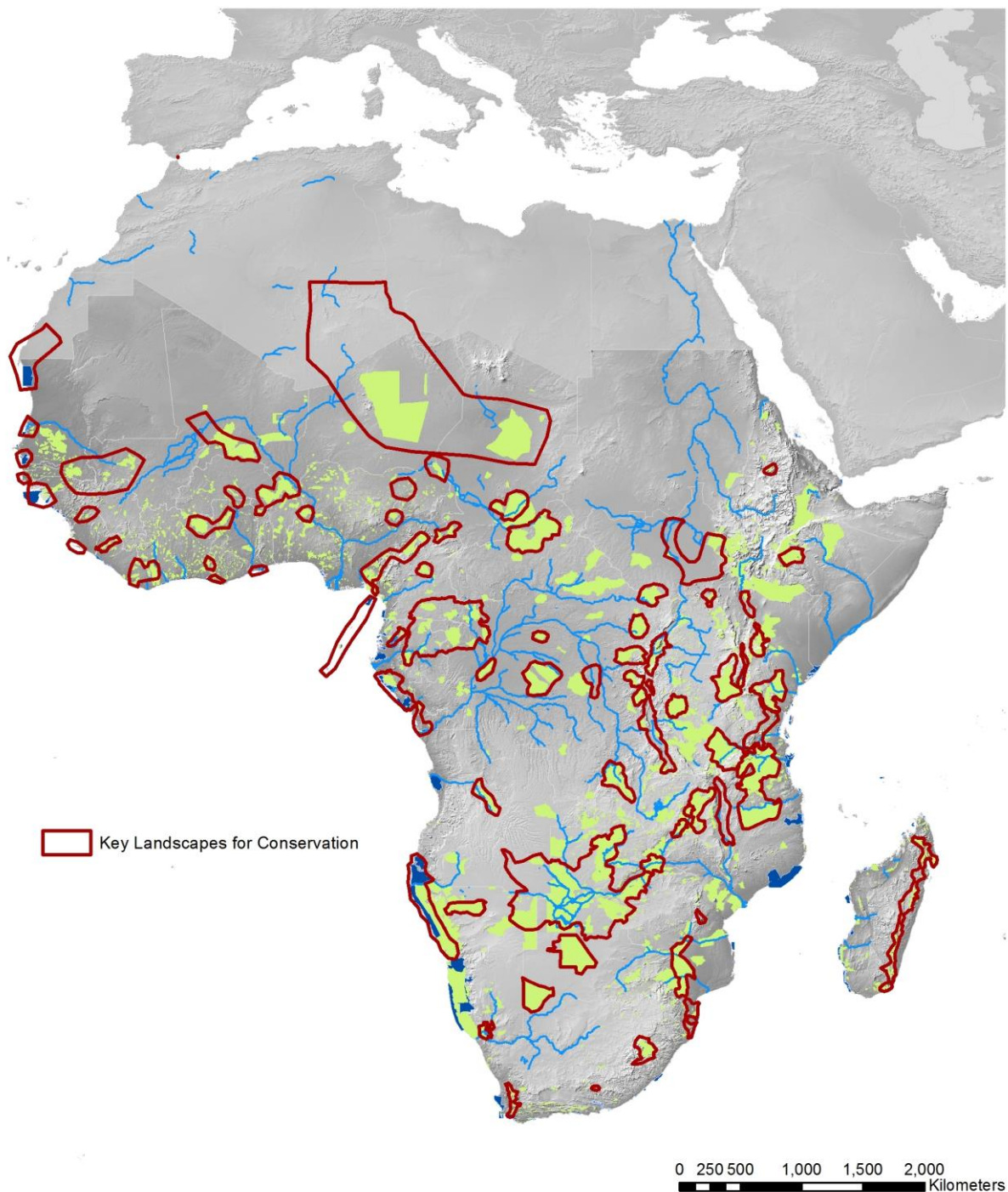


Figure 23. Location of Key Landscapes for Conservation (KLC) identified as priorities under the current review

5.1.1.2 Elements of Support for KLCs

There are five elements of support that will be provided at each site⁶⁶.

i. *Protected Area Management*

This element will raise the capacity of park management to (a) conserve wildlife and wildlife habitats, (b) undertake surveillance and intelligence work, (c) enforce the law, (d) liaise with communities and assist them with their wildlife management issues, including human-wildlife conflicts, (e) liaise with private, community and state-owned tour operators, assisting them with information about wildlife and park regulations, and (f) monitor species, wildlife habitats, conservation threats and internal staff performance, and manage information systems.

ii. *Landscape Management for Conservation*

This element will raise the capacity of park management to assist in planning and implementing wildlife management at the landscape level (including areas surrounding protected areas), by establishment of wildlife corridors, restoration of animal migration, decommissioning of fenced barriers, and liaison with community representatives over management of livestock grazing and watering, wildlife disease transmission and other human-wildlife conflicts.

iii. *Landscape Management for Livelihoods*

This element will assist with establishing and overseeing conservancies on private and communal lands.

Private: One of the most important aspects of conservancies on private land is the removal of internal fences between properties accompanied by joint management of land and wildlife resources. The amalgamation of ex-livestock farms and other properties into conservancies potentially generates greater landscape heterogeneity and connectivity. Landowners will be assisted with information and advice on conservation, wildlife ecology, eco-tourism and legal issues.

Communal: Communities will be provided with long-term training in many aspects of CBNRM, including natural resource governance, wildlife conservation, human-wildlife conflict, land-use conflicts such as the overlapping with mining permits, livestock disease, ecotourism, safari hunting, business start-up, business management, administration of community institutions, and legal issues. Start-up support will be given to a number of approved CBNRM programmes.

iv. *KLC/TFCA Governance*

Institutional development in some parks and TFCAs has struggled operationally because of the top-down imposition of park management on local-level communities and officials. From a more favourable angle, the same top-down park management has enabled the bridging of international boundaries and greater *policy-level* cooperation. This fourth element of support will provide managers with a wider context in which to understand the needs of the different parties and determine the optimum structure of KLC/TFCA institutions. It will also be of assistance to the overall institutional reform process in the country (Section 5.1.2) and contribute to greater *operational* cooperation in the governance of TFCAs and other PAs.

Support will be provided for instituting a Council of Elders for the Environment at each site (Section 4.1.5).

v. *Awareness Raising*

⁶⁶ In planning for site development, allowance should be made for fewer resources available within lower capacity countries (such as Lesotho, Mozambique and Zambia) to establish and maintain TFCAs and other KLCs.

This element will establish wildlife clubs in the schools of the surrounding communities and assist with awareness-raising through training, information, materials, publications, communications, visits to the protected areas, activities, events, competitions and meetings. This is the site-based element of the Awareness Raising and Communication Programme which is outlined in Section 5.5.

5.1.1.3 KAZA TFCA

The Kavango-Zambezi Transfrontier Conservation Area is so exceptional in terms of its size, natural resources and wildlife that it warrants an exceptional programme of support over the long-term. The high-level objective of this programme is to develop governance and adaptive management systems for KAZA TFCA that facilitate international cooperation and ensure fully operational transfrontier conservation, transboundary natural resource management, ecosystem conservation and sustainable rural development⁶⁷.

More details of the programme of support for KAZA are given in Section 4.5. It will comprise the following components⁶⁸:

- i. Maintain and manage the shared Natural and Cultural Heritage Resources and biodiversity of the KAZA TFCA;
- ii. Promote and facilitate the development of a complementary network of Protected Areas linked through corridors to safeguard migratory wildlife species;
- iii. Provide opportunities, facilities and infrastructure that shall transform the KAZA TFCA into a premier tourist destination in Africa;
- iv. Facilitate tourism across international borders in the KAZA TFCA;
- v. Enhance sustainable use of natural and cultural heritage resources to improve the livelihoods of local communities and reduce poverty;
- vi. Facilitate public-private-community partnerships, private investment and regional economic integration;
- vii. Share experiences and pool resources and expertise across international borders to facilitate development;
- viii. Harmonise relevant legislation, policies and approaches in natural and cultural resource management across international borders; ensure compliance with international protocols and conventions related to protection and sustainable use of species and ecosystems;
- ix. Build capacity for resource management within the KAZA TFCA through training, enterprise development and mentoring programmes;
- x. Harmonise relevant legislation, policies and approaches in the area of transboundary animal disease prevention, surveillance and control.

Indicative support for KLC/TFCA site development:

Please refer to Volume 1 for information on funding.

5.1.2 Country Level

This support is aimed primarily at the government departments and agencies responsible for wildlife conservation and their liaison with institutions in associated sectors, including community development, education and awareness-raising.

i. Policy and legal reforms

⁶⁷ KfW development bank currently supports KAZA on behalf of Germany's Federal Government.

⁶⁸ These components are identified in the KAZA TFCA Treaty.

Reforms to policy and law are required in most countries of southern Africa to support rural development through management of natural resources by rural communities and private landowners. The reform process in each country will receive support and guidance from the regional level (Section 5.1.3).

ii. Institutional Strengthening of key government wildlife departments

Traditional wildlife departments require new structures, staffing and training in support of a new dual role in wildlife conservation and community management of natural resources. Training will be given in the regulation of wildlife businesses established by community and business-sector partners (see Section 4.3). Institutional strengthening will incorporate specific training in KLC/TFCA governance (including land-use conflicts and environmental governance), and in international relations.

iii. Awareness Raising and Communication

Awareness-raising of KLCs, natural resource management, wildlife conservation and ecotourism will be supported through national level programmes. A support unit will be established within wildlife departments to launch programmes in the following:

- Wildlife clubs (initially in the vicinity of TFCAs)
- KLC/TFCA information using multiple media
- Establishing an Environmental Council of Elders at each TFCA.
- Developing and testing an environmental module for teaching wildlife conservation and sustainable use of natural resources at primary and secondary school levels in participation with environmental education partners.

Indicative support for institutional strengthening:

Please refer to Volume 1 for information on funding.

5.1.3 Regional Level

The KLC/TFCA approach requires key reforms in national laws to give landholders and rural communities the right to manage wildlife and woodlands for their own benefit. Individual country reforms can take many years or decades to achieve. The most effective approach will be to offer the relevant expertise at the regional and Pan-African level.

i. SADC TFCA Joint Programme to Enable Legal Frameworks

This programme will be established with SADC for the purpose of communicating to member states the need for reforms in resource rights and land tenure. It will provide advice and practical assistance in harmonizing relevant legislation, policies and approaches in natural and cultural resource management across international borders within the KLC/TFCA context.

ii. NEPAD TFCA Joint Programme to Enable Legal Frameworks

A sister programme will be established within NEPAD so that individual African states are encouraged to adopt TFCAs, and the linked land-reforms, as a way of implementing NEPAD.

Indicative support for legal and policy expertise:

Please refer to Volume 1 for information on funding.

5.2 KEY LANDSCAPES FOR CONSERVATION: (II) INDEPENDENT CONSERVATION AREAS

Many areas of outstanding importance and value for wildlife do not lie on the boundaries but entirely within the central confines of African states. Examples in southern Africa include the Central Kalahari Game Reserve of Botswana, Etosha Pan National Park in Namibia, North and South Luangwa National Parks in Zambia and Mountain Zebra National Park in the Eastern Cape Province of South Africa (Table 9). Amongst those that do lie at the frontier, not all have the possibility of being twinned with a PA across the international boundary. Such Independent Conservation Areas (ICAs) have unique attributes that require long-term conservation within the same expanded framework (i.e. incorporating community conservation and natural resource use in areas surrounding the Protected Area). They may therefore qualify as KLCs.

5.2.1 Selection of Independent Conservation Areas (ICAs) as KLCs

In supporting long-term conservation of distinctive African ecosystems, this strategy features the same distinctive elements as are found in TFCAs. It is based on an ecosystem approach where the ecosystem is defined essentially by emblematic large African mammals and their habitat requirements. It is cognizant of each area's resilience to fundamental change in land-use in the surrounding landscape, such as that accompanying rural population expansion. It foresees the need for sustainable natural resource management by surrounding landholders and communities.

Independent Conservation Areas will need to present globally important conservation attributes of their own in order to qualify as KLCs. It is possible that clusters of protected areas in the central region of an African state might become linked within a larger conservation area and developed as a unit in an analogous way to TFCAs. The new protected land unit could then be re-evaluated for qualification as a KLC. ICAs should be evaluated as potential KLCs according to the criteria in Box 6.

Indicative support for ICA site development:

Please refer to Volume 1 for information on funding.

5.2.2 ICAs - Country and Site Level Support

Conservation actions for developing ICAs will follow the same format as those outlined for TFCAs at the country-level and site-level (Sections 5.1.1 and 5.1.2). Every opportunity will be taken to link effective park management with community management of natural resources.

5.3 TRAINING

Improved training is required at all levels of seniority in wildlife management and related issues in land-use and environmental governance, but in most countries of the region there is a particular gap in training of mid-level officers (wardens and senior site officers) which extends across Africa. A rising demand for mid-level training of managers of communal lands and managers of nature-based tourism operations is also anticipated.

There is a need for specific anti-poaching training to assist management in tackling organised criminal poaching of elephant and rhino.

There is also a need to improve access to training in Africa at the senior level (for regional wardens, senior government officers and other wildlife professionals working in conservation, education, tourism and environmental sectors). The Masters in Tropical Resource Ecology (MTRE) offered by the University of Zimbabwe has provided advanced wildlife training for conservation professionals from across Africa since its inception in 1972. During the 1990s it received senior-level training-advancement through its partnership with the University of Edinburgh under EU-SADC support. The MTRE has now been extended back to a two-year course with some additional modules. Currently the course is only receiving Zimbabwe students. Without a suitable training centre, many graduate students in Africa are going elsewhere in the world for advanced-level training.

It will be important to ensure that training covers the needs of management within a broader environmental-management system. Mining and oil prospecting for example have considerable direct impact on wildlife and biodiversity and many secondary impacts. Many of the theses from the MTRE course over the last few years have covered topics on wider environmental perspectives including issues of water pollution in rivers and underground water supplies, recovery of mine dumps, land use and disease⁶⁹.

5.3.1 Wildlife Training

Mid-level training of protected area managers can be increased by expanding facilities at existing training colleges and/or establishing new ones. At present most training in the region is undertaken at the Southern African Wildlife College on the western edge of Kruger National Park in South Africa or at the College of African Wildlife Management, Mweka on the slopes of Mount Kilimanjaro in Tanzania.

i. Needs Assessment

A 'needs assessment' will be undertaken to determine gaps in current training and the scale of training expansion required over the next ten years in the region. The advantage of a single regional centre is that it gives students the opportunity to meet with others from neighbouring countries taking the same courses which will expose them to a greater variety of wildlife issues and contexts. It also brings the advantage of scale – in terms of the equipment and facilities available and exposure to visiting experts and specialists. On the other hand, an in-country training centre enables students to focus on the unique wildlife issues, systems of governance and languages that they will be facing in their own country on graduation. It will be less expensive to train students in their own country. Furthermore, a level of competition between neighbouring research centres may act to raise standards. The needs assessment will examine these issues, identify different options for expansion, and make recommendations.

ii. Establishment of Training Colleges

A number of mid-level colleges will be established according to the needs assessment. Activities for each college will fall within 4 components:

- a. Design of training college, accommodation block and staff housing;
- b. Construction and establishment of the college;
- c. Supply of furnishings and equipment;
- d. Support to running costs for 3 years.

⁶⁹ An impression on of the Masters course on Conservation and Natural Resource Management offered by the University of Zimbabwe and its partners is provided here: <http://www.rp-pcp.org/>

Indicative costs

Please refer to Volume 1.⁷⁰

iii. MSc in Tropical Resource Ecology

Many wildlife professionals at a senior level in Africa have benefited from training received from the Masters in Tropical Resource Ecology at the University of Zimbabwe which forms part of the Tropical Resource Ecology Programme. As mentioned, the programme has attracted only Zimbabweans since about 2003. There is a need for senior-level training of wildlife professionals in Africa of the highest international standard, within a research centre closely linked to wildlife centres throughout the world, which keeps abreast of rapid ongoing advances in conservation science and management.

Whether such training is based at the University of Zimbabwe or elsewhere, it must overcome two main problems. The first is the quality of graduates coming for postgraduate education. Presently the brightest of these are being attracted by more remunerative careers and/or going abroad for their training. There would therefore need to be provision for competitive bursaries to attract students from the region and beyond. The second problem is to raise the level of teaching and supervision on offer to the students. The solution to this would be to link support to a partnership with a UK (or other English-speaking) University. As mentioned, the EU supported the SADC Wildlife Management Training Project (1997-2001) which partnered with the University of Edinburgh to provide direct training support to the Tropical Resource Ecology Programme at the University of Zimbabwe. It succeeded in raising standards to the highest level. A longer term relationship is required which should develop a robust strategy for ensuring that the quality of training is sustained long after the support programme has ended.

Indicative cost:

Please refer to Volume 1.

5.3.2 Research and Monitoring at Conservation Sites

An effective way to lift standards of mid-level management in the field is through long-term collaborations between parks and high quality research institutions. Research programmes can assist with monitoring conservation threats, identifying species and in devising improved management methods that have direct benefits for the parks.

5.4 DISMANTLING WILDLIFE TRAFFICKING NETWORKS

Information on threats and risks to elephants and rhino in southern Africa, and on conservation planning is provided in Section 3.2 of this Volume. Our proposed strategic approach to elephant poaching, rhino poaching and wildlife trade is given separately in Sections 1-3 of Volume 6 which include recommendations for investigating and dismantling wildlife trafficking networks and disrupting their organisations by closing down the flow of money.

5.4.1 Additional Proposed Action

Follow up the study of national conservation spending and rates of decline of rhino (Leader-Williams & Albon 1988)⁷¹ with a study of site-specific conservation spending and current rhino poaching in South Africa or southern Africa. The aim of the study is to investigate the overall effectiveness of conservation spending.

⁷⁰ By way of guidance, plans can be provided on request for a national wildlife management training centre with accommodation for 60 junior staff and ten senior staff.

⁷¹ Leader-Williams, N and Albon, SD (1988) 'Allocation of resources for conservation'. *Nature* 336: 533–5.

5.5 AWARENESS RAISING AND COMMUNICATION

There is an over-riding need to create a conservation policy for Africa that is embedded in society, rather than imposed from above (Section 4.5). This will require a ‘blue-ribbon’ education and awareness-raising programme which not only informs all sectors about the benefits that can be derived from wildlife conservation but helps to uphold and champion the cultural values of the wildlife heritage. An important part of this programme is to provide up-to-date and accurate information on conservation issues, including natural resource management, biodiversity, African cultural traditions, eco-tourism, protected areas and the TFCA/KLC approach. The information has to be attractively presented and targeted at specific audiences.

The communication strategy will furnish materials and information in the following topics:

- Essential ecological facts about nature
- Nature conservation values and conflicts
- Nature conservation threats (all kinds)
- Illegal killing, harvesting and trade in wildlife
- Natural resource management and sustainable use of wildlife
- Protected areas and the TFCA/KLC approach to conservation
- The environment (air, water and soil) and its importance to health.

The strategy will target specific sectors individually, particularly the following:

- The news media with a library of briefings, sound recordings, video and news releases;
- Diplomatic missions and senior government officials requiring succinct information for effective political dialogue;
- Governmental officers and NGOs involved with wildlife conservation (who require the fullest briefings);
- Schools requiring improved curricula and educational materials on environmental issues, including natural resource management;
- Wildlife clubs requiring interpretative materials and equipment to support fun-filled educational activities;
- Environmental Councils for Elders which require location-specific information to support political dialogue.

A ‘Communications and Interpretation Support Unit’ will be based in each country to develop and disseminate information with the participation of environmental education organisations. Mobile information centres will visit rural locations to work with wildlife clubs and communities.

Indicative Cost:

High importance is attached to this activity because of the overriding need to evolve a conservation policy that is embedded in African society. We believe that awareness-raising, interpretation of conservation information and communication require a substantially greater investment that they have typically received in the past.

Please refer to Volume 1 for details of funding.

ANNEXES

ANNEX A. REFERENCES

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ANNEX B. WILDLIFE CONSERVATION INSTITUTIONS IN SOUTHERN AFRICA

The following is a small eclectic list of institutions working in the wildlife and biodiversity conservation field in southern Africa. It does not include the wildlife authorities in each country or many of the fine universities in the region. It is far from complete.

African Parks Network was established in 2000 by a group of conservationists, managers and businessmen with experience of protected area management. Their approach is to enter into long term partnerships with Governments to take direct responsibility for managing and financing national parks to ensure their survival. Their long-term aim is for these parks to generate a mix of sustainable income streams to pay for running costs and capital replacements.

AHEAD (Animal and Human Health for the Environment and Development) recognizes the importance of animal and human health to both conservation and development interests. It focuses on several themes of critical importance to the future of animal agriculture, human health, and wildlife health including zoonoses, competition over grazing and water resources, disease mitigation, local and global food security, and other potential sources of conflict.

AWF (African Wildlife Foundation)

BFA (Biodiversity Foundation for Africa) is a Zimbabwe Trust formed by scientists committed to conserving Afrotropical biodiversity through the improvement of scientific knowledge and its incorporation in the planning process. Not recently active.

BIOTA AFRICA (African and German Research Grouping that supports research into sustainable use and conservation of biodiversity in Africa. It has a strong monitoring component through its Biodiversity Observation Network.

CAMPFIRE (Community Areas Management Programme for Indigenous Resources) is a community based natural resources management (CBNRM) programme developed by the Government of Zimbabwe in the late 1980s. Due to poor governance (financial benefits not reaching the community members) it has lost much of its early support.

CAPE (Cape Action for People) is a 20 year partnership of government and civil society aimed at conserving and restoring the biodiversity of the Cape Floristic Region and the adjacent marine environment, while delivering significant benefits to the people of the region.

CI (Conservation International)

CIFOR (Centre for International Forestry Research)

COMACO (Community Markets for Conservation) is a 'novel, emerging company in Zambia that is pioneering an innovative way for making markets and conservation work together'.

Department of Conservation Ecology and Entomology at Stellenbosch University

Ecoexist – a small NGO in Botswana

Elephants Without Borders – a small NGO in Botswana

FZS (Frankfurt Zoological Society)

GreenMatter is a public-private initiative based in South Africa that develops skills for the Green Economy, and for supporting the sectors transformation agenda. <<http://www.greenmatter.co.za/>>

IFAW – In addition to its rescue and care work with individual animals, IFAW supports long-term projects that protect animal populations and habitats. For example, it undertakes park protection work in Liwonde NP, Malawi through its elephant landscapes and communities programme. Offices in Kenya and South Africa.

IRDNC (Integrated Rural Development & Nature Conservation) in Namibia

KAZA TFCA (Kavango Zambezi Transfrontier Conservation Area) is potentially the world's largest conservation area, spanning five southern African countries; Angola, Botswana, Namibia, Zambia and Zimbabwe, centred around the Caprivi-Chobe-Victoria Falls area.

LIFE project in Namibia, based on ADMADE in Zambia and CAMPFIRE in Zimbabwe, in which well-governed local community conservancies manage and receive benefits from sustainable wildlife management.

Lowveld Rhino Trust in Zimbabwe

Mammal Research Institute, University of Pretoria

Miombo Network is an intercore project activity of the IGBP (International Geosphere-Biosphere Programme) organised within the Southern Africa region. The aims of the Network are to understand how land use is affecting land cover and associated ecosystem processes in the miombo ecosystems of central, eastern and southern Africa; to assess what contribution these changes are making to global change; and to predict what effects global change in turn could have on land use dynamics and ecosystem structure and function.

NACSO (Namibian Association of Community Based Natural Resource Management Support Organisations) is an association of 15 Namibian NGOs, the University of Namibia, and an international NGO which was established in 1999. The purpose of NACSO is to provide quality services to rural communities seeking to manage and utilise their natural resources in a sustainable manner.

NACSSA (National Association for Conservancies & Stewardship South Africa) was established in 2003 to promote community-driven conservation nationally by supporting provincial conservancy associations.

ORI (Okavango Research Institute) is an Institute for the study and conservation of one of the world's largest and most intact inland wetland ecosystems - the Okavango Delta- as well as other southern African wetlands, river basins, watersheds and surrounding dry lands.

Percy Fitzpatrick Institute of African Ornithology trains scientists and encourages primary research in African evolutionary ecology, conservation biology and ornithology.

PPF (Peace Parks Foundation) initiated the establishment of transfrontier conservation areas (peace parks) in southern Africa. It encourages political will and support for TFCAs and facilitates each of the development phases of new and existing areas.

Predator Conservation Trust – a small NGO in Botswana

SADC (Southern African Development Community) consists of fifteen Member States located in the southern and central part of the African continent. They are Angola, Botswana, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. The Community's role has evolved from the time of political liberation in the 1970s to economic cooperation and integration in the 1990s. This evolution is reflected in its vision of "a common future for all countries and peoples of southern Africa". Consequently, there is considerable political will for trans-boundary cooperation in southern Africa.

SADC Regional Environmental Education Programme supports environmental education processes in the southern African region.

SANBI (South African National Biodiversity Institute) leads and coordinates research, and monitors and reports on the state of biodiversity in South Africa. It engages in ecosystem restoration and rehabilitation, leads the human capital development strategy of the sector and manages the National Botanical Gardens as 'windows' to South Africa's biodiversity for enjoyment and education.

SAWA (Southern African Wildlife College) < <http://www.wildlifecollege.org.za/>>

SAWEN (Southern African Wildlife Enforcement Network)

SAWMA (Southern African Wildlife Management Association) publishes the South African Journal of Wildlife Research < <http://www.sawma.co.za/>>

TREP (Tropical Resource Ecology Programme) University of Zimbabwe

Victoria Falls Wildlife Trust – a small NGO in Zimbabwe

WCS (Wildlife Conservation Society)

WESSA (Wildlife and Environment Society of South Africa) a South African environmental organisation with a mission to implement high impact environmental and conservation projects. < <http://www.wessa.org.za/>>

The Wilderness Foundation creates opportunities to encourage, plan and protect African wild lands and wilderness, uplift the knowledge and lives of citizens and stimulate an environmental ethos among current and future leaders.

WWF Eastern & Southern Africa Programme (Nairobi Office)

WWF South Africa (Head office in Cape Town)