African Elephants and Rhinos

Status Survey and Conservation Action Plan

Compiled by

D. H. M. Cumming, R. F. Du Toit and S. N. Stuart

IUCN/SSC African Elephant and Rhino Specialist Group

Contents

Foreword

The African mega-vertebrate fauna, in its richness and diversity, surpasses that of any other continent. It is uniquely African and is a resource of high economic value that can be used for the benefit of the people of the countries in which it occurs. However, such use must be skillfully managed if the resource is to retain its value. It must be recognised that the resource is based on living systems with characteristic biological limitations, that its use is frequently highly charged with emotions, and that its marketability is based on the maintenance of acceptable aesthetic standards.

These conflicting emotions generated around the aesthetic qualities of wildlife and its pragmatic use as a resource are a feature of human societies stretching back into antiquity. Wildlife has been, and remains, the subject of much folklore and art, extending from the stone age to the present age of technology. Hunting for the necessities of life, and more recently for recreation, goes very deep into the history of the human race.

It is these consumptive uses of the elephant and the rhinoceroses that has caused their distributions to become increasingly restricted within the African continent. These species have become symbols of the conservation movement in Africa. The rhinos are becoming increasingly restricted to southern Africa. Most of the white rhinos now occur in South Africa, and Zimbabwe how has nearly half the total population of the black rhinoceros. The production of this action plan by the IUCN/SSC African Elephant and Rhino Specialist Group on the conservation of these three species of large mammal is highly commendable. The information presented in this plan will be used for the protection of these mammals, all of which have become major tourist attractions on the African continent.

These species are being threatened by illegal hunting by poachers, some of which is organised by syndicates outside the African continent. The elephant is treasured for its ivory and the rhinos for their horn. However, of late, the Zimbabwe National Parks anti-poaching units have noticed that the poachers are also removing rhinoceros ears, tails and male sex organs. Information received from apprehended poachers is making it clear that these rhinoceros parts are also used for medicinal purposes. This means that even if rhinos were to be dehorned, they would still be poached for these other parts and derivatives.

It is for this reason that this action plan considers means to curb poaching at the local level and the illegal trade at the international level. The plan considers not only environmental issues but also the international cooperation needed to reduce the illegal trade in ivory and rhino horn. The nations and people who use parts or derivatives of these animals must be encouraged to use substitutes. For example, those states that use rhino horn for the manufacture of dagger handles can easily be persuaded to use substitutes if international pressure is applied and if the illegal trafficking of the horn is halted.

However, if these species are to survive in the long-term, it is probably also necessary to justify their existence in economic terms. In those countries where their numbers are now very low, economic benefits can be derived by non-consumptive uses of the animals. These animals can generate a lot of revenue if used for game viewing, photographic safaris, and by the film industry. But in those countries in which the elephant is still found in large numbers, carefully controlled recreational hunting could continue to be authorised, if so desired. If these animals are not seen to be accruing benefits to local people on the ground, who bear the social costs of living with the animals, no amount of protection will save them in the long-term if these people decide against their protection and conservation. This is particularly true with elephants and rhinos, which are dangerous and can cause severe problems. The people living with these animals have less cause to protect them if they realise no economic or other benefits from them. This action plan produced by wildlife specialists also includes these economic considerations.

It is also necessary to recognise that nature conservation, especially in areas set aside exclusively for this purpose, is a form of land-use dependent upon certain basic criteria. It is worth noting that the long-term success of human endeavours in organised society depends upon the reconciliation of three sets of factors linked in a chain of survival. Reduced to their generalised forms, these are the socio-political, ecological and economic parameters upon which the fabric of society and government ultimately depends. In this context, we should recall that both the socio-political and the economic links in this chain are forged by man, and can be modified by him. However, the ecological link is based on the laws of nature, which cannot be changed. This action plan considers ways in which the socio-political and economic parameters can be modified in order to promote the conservation of the ecosystems in which the African elephant *Loxodonta africana*, the black rhinoceros *Diceros bicornis*, and the white rhinoceros *Ceratotherium simum* can thrive, thereby ensuring that the laws of nature work in favour of the continued existence of these remarkable species.

W.K. Nduku
Director of National Parks and Wildlife Management
Zimbabwe

Acknowledgements

Much of this action plan is based on the work done by the members of the IUCN/SSC African Elephant and Rhino Specialist Group (AERSG) at its meeting held in Nyeri, Kenya, 17-20 May 1987. Permission to hold the meeting was kindly granted by the Government of Kenya through the Department of Wildlife Conservation and Management, which also actively participated in the organisation of the meeting. Particular thanks are due to the Department's then Director and AERSG member, Dr. Perez Olindo. The costs of the meeting were largely met by WWF -- the World Wide Fund for Nature, with additional financial contributions from the African Wildlife Foundation, the African Fund for Endangered Wildlife, and the Save African Endangered Wildlife Foundation. Considerable assistance in arranging the meeting was provided by Dr. Esmond Bradley Martin, Ms. Lucy Vigne, and Mr. Ed Wilson.

Most of this document was drafted by DHMC and RFdT, and SNS was responsible for editing the entire text and preparing it for publication. Mr. Rowan Martin authored section 4.5 and Appendix 1 and Dr. Iain Douglas-Hamilton provided extensive advice for section 4.4. The document has been extensively reviewed by AERSG members around Africa, in particular the current AERSG Chairman, Dr. David Western. Additional advice came from Frederic Briand, Steve Edwards, John Hanks, Martin Holdgate, Jeff McNeely, Jeff Sayer, and Jim Thorsell. Without the help of all these people, we would not have been able to complete this document, and we are very grateful for this kind assistance.

Finally, special thanks are needed for the United Nations Environment Programme (UNEP) for supporting this publication, and the World Wide Fund for Nature (WWF) for their continued support of the IUCN Species Survival Commission action planning process.

David H.M. Cumming
Raoul F. Du Toit
Simon N. Stuart

Chapter 1: Introduction

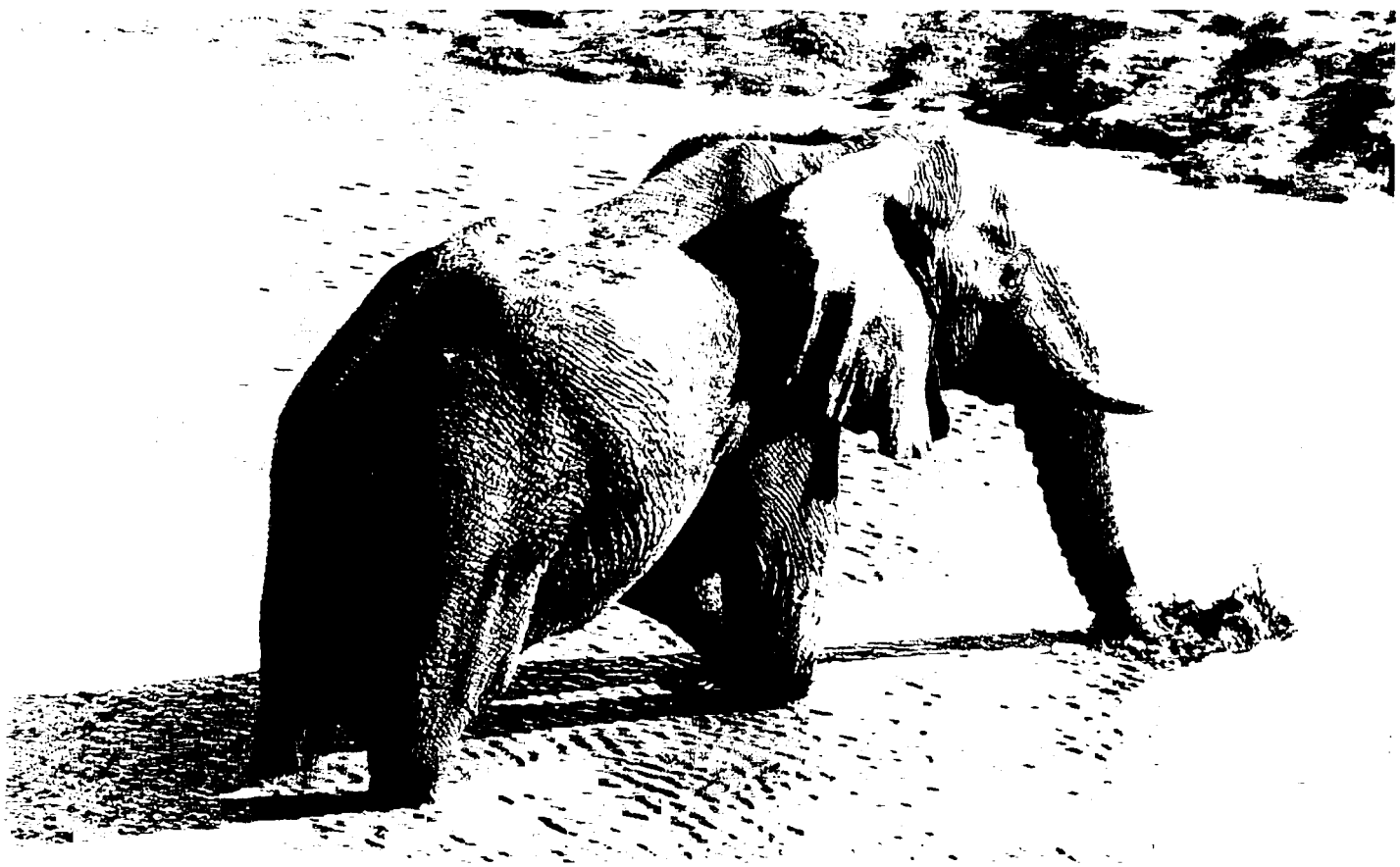
This action plan addresses the conservation needs of three species of large mammal occurring in Africa: the African elephant *Loxodonta africana*; the black rhinoceros *Diceros bicornis*; and the white rhinoceros *Ceratotherium simum*. All three species are major foci of the conservation movement in Africa, and they also are the subject of much international concern. It has become clear that a coordinated approach is essential if these species are to be saved from extinction, and effectively managed for the benefit of the people of Africa.

1.1 The African Elephant

The African elephant is the largest of all land mammals, and is a symbol of the African continent. Its only close living relative is the slightly smaller Asian elephant *Elephas maximus*. Male African elephants, when fully grown, have a shoulder height of 3-4 metres and a weight of 5,000 to 6,000 kg. Two subspecies are recognised, the savanna elephant *L. a. africana*, and the forest elephant *L. a. cyclotis*. The forest elephant, which lives in the equatorial forests of the central African basin and West Africa, is smaller than the savanna elephant and has slender tusks, which are generally straight or only slightly curved. The tusks point downwards, rather than forwards as in the savanna elephant. Over large areas of Africa where forests and savannas merge, elephants intermediate between the two subspecies are found. It is now known that this area of hybridisation is very extensive.

Elephants belong to a unique order of mammals, the Proboscidea, of which they form the only surviving family. Remains of the earliest known ancestor of the elephants were found at Lake Moeris, near El Fayyum in Egypt. *Moeritherium*, as it is named, lived about 25 million years ago and was the same size as a large pig. Several evolutionary lines became extinct, and modern elephants, which appear to have evolved some five million years ago along with the mammoths, are the only survivors. Less than 50,000 years ago mammoths still existed and early man depicted them in cave drawings. The cause of the extinction of the mammoths is still a matter of debate, but climatic change and over-hunting have been implicated, an ominous warning since these are probably the most serious threats to the African elephant today.

The elephant ranges throughout Africa south of the Sahara in almost all habitats from savannas to rain forests, swamps to deserts, and seashores to high mountains. Its range includes



Elephant (Photo: R. Dal Bello/WWF)

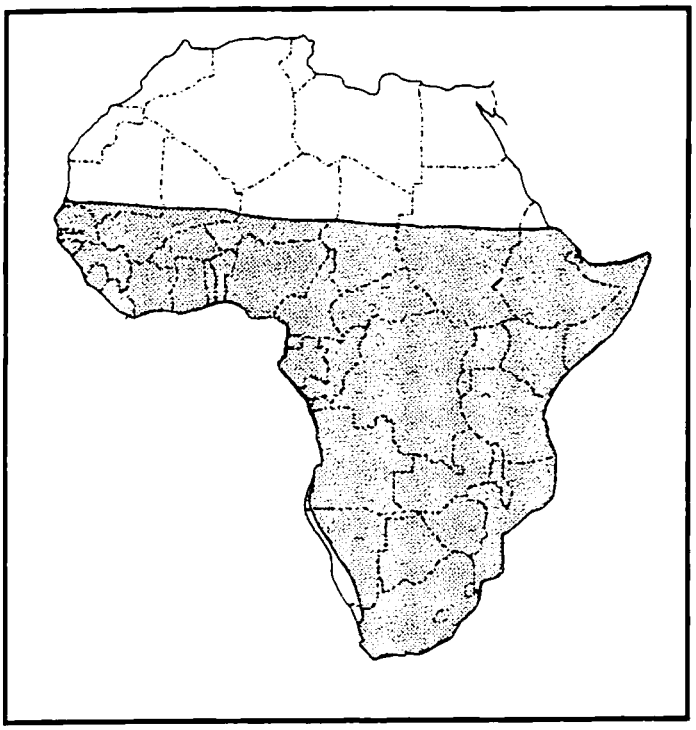


Figure 1.1a Probable distribution of the African elephant around 1600.

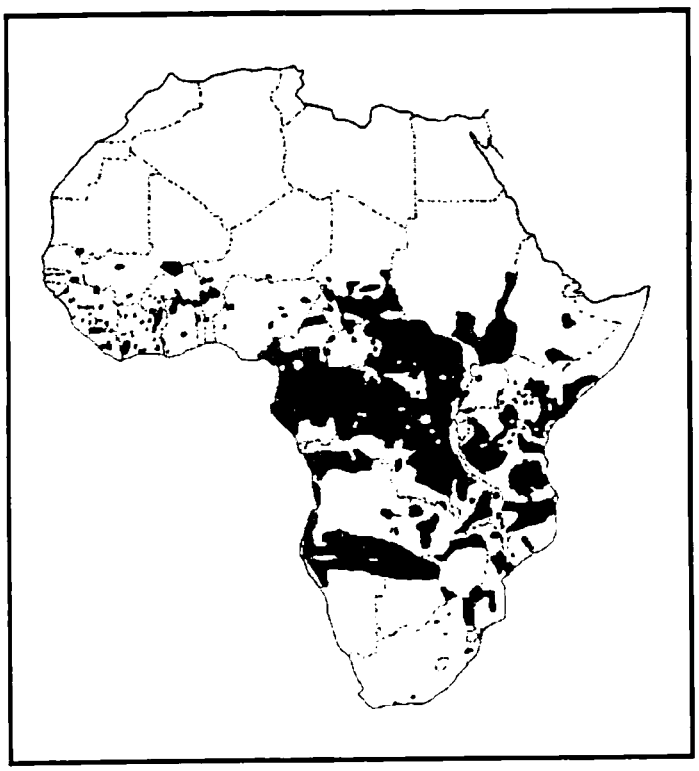


Figure 1.1b Distribution of the African elephant in 1987 (from Burrill and Douglas-Hamilton 1987).

those of most of Africa's large wild animals and the impact of elephants on habitat has a profound effect on the other species among which it lives. It is only in relatively recent times that its range has become fragmented, with populations being wiped out over large areas.

Elephants have a complex social system with strong maternal bonds based on breeding groups of females and young. Males which live singly or in small groups, have no permanent ties with the females, but may associate with them while feeding as well as breeding. The area over which herds move is dependent on the availability of food and water. Where both are plentiful throughout the year elephants may move over relatively small distances, but elsewhere they may migrate hundreds of kilometres to find nourishment.

Unlike the situation with its Asian cousin, no indigenous tradition of elephant domestication survives in Africa. However, the popular belief that the African elephant cannot be domesticated is incorrect. Hannibals's marches across Europe indicate that there must once have been a tradition of domestication. More recently, during the colonial period the Belgians successfully domesticated elephants in north-eastern Zaire, and four of these animals still survive in the Garamba National Park, where they are used as a tourist attraction. There is now a fresh attempt to renew the domestication programme in Garamba.

1.1.1 The decline of the elephant

It is clear from ancient historical writings that the elephant once occurred in North Africa, up to the Mediterranean coast. Today it is extinct throughout this area. The decline of the elephant seems to be linked to three major factors:

- The demand for ivory, which has often been at a level that is totally unsustainable.

- Desertification, which has clearly been a major cause for the disappearance of the species in North Africa and the Sahara, and continues to beleaguer the tiny remaining populations in the Sahel.

- Conflicts between elephants and humans for the use of land. Although this has perhaps been of minor significance through most of history, the rapid growth in human populations in Africa means that large areas of the continent are now permanently unsuitable for elephants.

Although the last of these factors is likely to become the long-term limitation on elephant numbers, there can be no doubt that today, as through most of history, it is the ivory trade that is reducing the population of the species most severely.

The elephant became extinct in North Africa during the European Middle Ages, causing ivory traders to look further afield for supplies. Excessive hunting brought the elephant to the brink of extinction in South Africa in the 18th and 19th centuries. A similarly unrestricted rush for ivory took place in

West Africa, peaking in the late 19th and early 20th centuries, reducing the population to tiny scattered fragments in this part of the continent, from which it has never recovered. Savanna elephants were particular susceptible to hunting, since they lived in more accessible areas.

At the end of the last century, legislation introduced over much of the continent brought the situation more under control. These measures were greatly helped by a fall in the ivory price and a drop in demand following the first world war. As a result, during the middle part of the 20th century, elephant populations recovered substantially over much of central, eastern and southern Africa, to the extent that in several areas, major culling programmes had to be introduced to prevent serious habitat damage and human-elephant conflicts. All this changed suddenly in the early 1970s when the trade revived in response to world financial instability. Both the demand and the supplies soared and the amount of ivory leaving Africa rose to pre-1914 levels. There has always been a legal ivory trade, resulting from natural mortality, sport-hunting, and control and culling programmes. However, in recent years this has been insufficient to supply the renewed demand for ivory, especially in eastern Asia (the Asian elephant now being much too rare to supply local demand). Most of the ivory now leaving the continent has been taken illegally, and the profits derived from it are not returned to the countries of origin. The illegal ivory trade is

Southern white rhino (Photo: National Parks, Pretoria/WWF)

little more than economic sabotage of some of the world's poorest countries. The situation is all the more tragic because a legal and controlled trade could bring great economic benefits to Africa without jeopardising the conservation of the species. Zimbabwe is an example of a country where this balance has been achieved.

The contraction of the elephant's range in Africa is displayed in Figures 1.1a and 1.1b.

1.2 The African Rhinos

The black rhinoceros once ranged widely throughout the savannas of Africa, only avoiding the equatorial forest belt and some of the most arid desert regions. The white rhinoceros, by contrast has always been more restricted (at least in historical times), occurring as two isolated subspecies, the southern white rhino *Ceratotherium s. simum*, restricted to southern Africa, and the northern white rhino *C. s. cottoni*, confined to a belt north of the tropical forests. Both species are very large animals: the black rhino can measure up to 1.5 m at the shoulder, and can weigh up to 1,400 kg; equivalent figures for the white rhino are 1.75 m and 3,600 kg. This is considerably larger than their three Asian cousins, the great one-horned rhino *Rhinoceros unicornis*, the Javan rhino *R. sondaicus*, and the Sumatran rhino *Dicerorhinus sumatrensis*. Despite their names, both the African species are grey. The name "white" is believed to have arisen from a mistaken translation of the Boer word "wijde" for wide, referring to the broad square lips of the species.

At least seven subspecies of the black rhino have been described, as follows:

Diceros b. bicornis	Cape Province, South Africa
D. b. chobiensis	Southern Angola, and Chobe area, Botswana
D. b. minor	South Africa to Kenya
D. b. michaeli	Kenya and Tanzania
D. b. ladoensis	Northern Kenya and Sudan
D. b. longipes	Central Africa
D. b. brucii	Somalia and Ethiopia

The validity of these forms is, however, based on inadequate material, and is still open to question. In this action plan, it has been decided to consider the black rhino as four separate regional units, rather than following the named subspecies. These regional units are the south-western desert rhinos (in Namibia), the animals of south-central Africa (north to central Tanzania), those in East Africa (northern Tanzania and Kenya), and the tiny remnant populations north of the rainforest belt (in Cameroon, Chad and Central African Republic). The rationale for adopting this approach is given by Du Toit, Foose and Cumming (1987) and outlined in Chapter 3.

Rhinos and elephants are not closely related. The rhinos (Rhinocerotidae) are one of the three surviving families of the order Perissodactyla (odd-toed ungulates), the others being the horses and asses (Equidae) and the tapirs (Tapiridae). Several species of rhino are known from the fossil record. The lineage of the black rhino dates back 12 million years when *Paradiceros mukirii* occurred in Kenya and Morocco. Several species of *Diceros* subsequently occurred in Africa and Europe, with *D. bicornis* appearing about four to five million years ago. The lineage of the white rhino is much more recent; the genus *Ceratotherium* first appeared during the Pliocene, with the earliest records of *C. simum* dating back three million years.

Both the African rhino species are savanna animals, and generally avoid the forest zones (although the black rhino

occurs in mountain forests in parts of East Africa). The black rhino is a browser, often associated with denser thickets, whereas the white rhino is a grazer living more in the open plains. While the black rhino is generally solitary and hostile when disturbed, the white rhino is more social and rather placid.

1.2.1 The decline of the rhinos

The decline of both species of rhino in Africa is mainly due to the excessive demand for the horn. Early European travellers to Africa reported large numbers of both black and white rhinos. However, major declines had already started during the last century. The black rhino was wiped out through almost all of West Africa during the last century, and since the 1940s there have been no reports of the species west of Cameroon. The species was also severely reduced throughout southern Africa during the last century. Some recovery took place during this century as stricter conservation measures were introduced, but with the increasing demand for rhino horn during the 1970s, these gains have since been lost in most of the southern African countries. Black rhinos initially declined much more slowly in East Africa, but this situation deteriorated rapidly starting in the early 1970s, and today only small fragmented populations survive. During the late 1960s it was estimated that some 70,000 black rhinos survived in Africa; by 1981 only 10,000 to 15,000 survived, and this was further reduced to only about 3,800 in 1987.

The white rhino has similarly been greatly reduced. The southern subspecies was held in high esteem by early European settlers for its meat and for its valuable fat, and was heavily exploited. By 1892 it was considered extinct. However, a few years later some were found in the Umfolozi-Hluhluwe region in Natal and given protection. These have now increased to 4,500 animals, and the population has been expanded with the help of many translocations and reintroductions. However, the history of the northern subspecies has been much less satisfactory. Of a population of some 700 animals in Zaire, Sudan, Central African Republic and Uganda in the 1970s, only 12 animals remained in the Garamba National Park in Zaire by 1983. This last remaining population has been the focus of a major collaborative conservation project, and by 1988 the number had increased to 22.

For many years, there has been a continuous whittling away of rhino populations to provide horn for use in Chinese and allied medical systems. This demand has been responsible for bringing the three Asian species to the verge of extinction, and, as a result of their decline, demand for African horn grew. In the early 1970s there was a dramatic increase in the demand for rhino horn because of a new factor: the increased use of the horn for dagger handles in North Yemen. Most men in the Yemen Arab Republic wear a traditional type of dagger known as a *jambia*. Rhino horn has been used for many years for the handle of the more expensive *jambias*, which few could afford. But in the early 1970s, demand for rhino horn *jambias* rose rapidly as Yemeni men began to earn high wages in Saudi Arabia and other oil-rich states. As a result the price of rhino horn soared, with a 21-fold increase during the 1970s. The reason for the extraordinary declines in the black and northern white rhinos is therefore clearly apparent.

The contraction of the ranges of the black and white rhinos is shown in Figures 1.2a, 1.2b, 1.3a and 1.3b.

1.3 The IUCN/SSC African Elephant and Rhino Specialist Group

In view of the rapidly deteriorating conservation situation of both elephants and rhinos in Africa, the IUCN Species Survival Commission (SSC) established two specialist groups during the 1970s, one to cover elephants and one for rhinos. These groups were composed of experts on the conservation and management of these species. The role of the groups was to provide advice to IUCN, and its member governments and organisations, on the actions needed to conserve elephants and rhinos. This culminated in an important joint meeting of the two groups, held in Hwange, Zimbabwe, in August 1981, at which conservation priorities were assessed, and recommendations for long-term conservation action were developed. It was at this meeting that the groups were combined to form the existing IUCN/SSC African Elephant and Rhino Specialist Group (AERSG).

The action plan produced at the Hwange meeting was highly regarded as a model in terms of adopting a rational approach to setting priorities for species conservation. However, during the subsequent years it soon became apparent that it had not been successful in catalysing the action needed to halt the continuing decline in elephant and rhino populations. It was for this reason that the AERSG reconvened in Nyeri, Kenya, in May 1987 to consider a more consolidated approach to the problem. This publication is the result of that meeting. Although the publication of this document has been delayed for various reasons, its contents have already been used by a number of organisations to develop conservation programmes for elephants and rhinos. One major new development subsequent to the Nyeri meeting is the formation of a new inter-organisational committee, the African Elephant Conservation Coordinating Group (AECCG), made up of seven organisations which intend to collaborate to implement the elephant component of the action plan: IUCN, WWF, Wildlife Conservation International (WCI), the African Wildlife Foundation (AWF), the World Conservation Monitoring Centre (WCMC), the TRAFFIC Network, and the European Economic Community (EEC). The Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) also works in close collaboration with the AECCG. The action plan published here is being used by these and other organisations, and by African governments, to develop the necessary projects and other activities to ensure that implementation actually takes place.

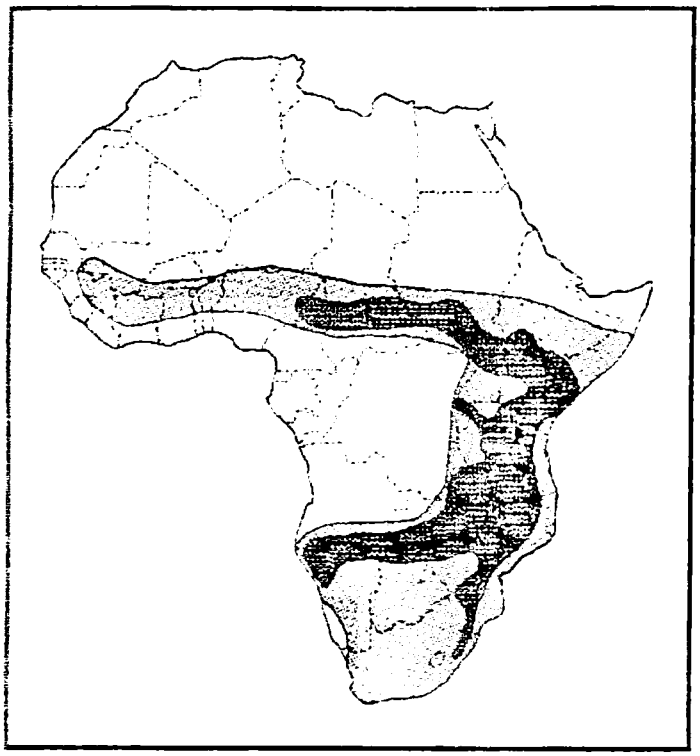


Figure 1.2a Former distribution of the black rhinoceros. Light shading indicates probable distribution around 1700; dark shading indicates distribution in 1900 (adapted from Cumming 1987).

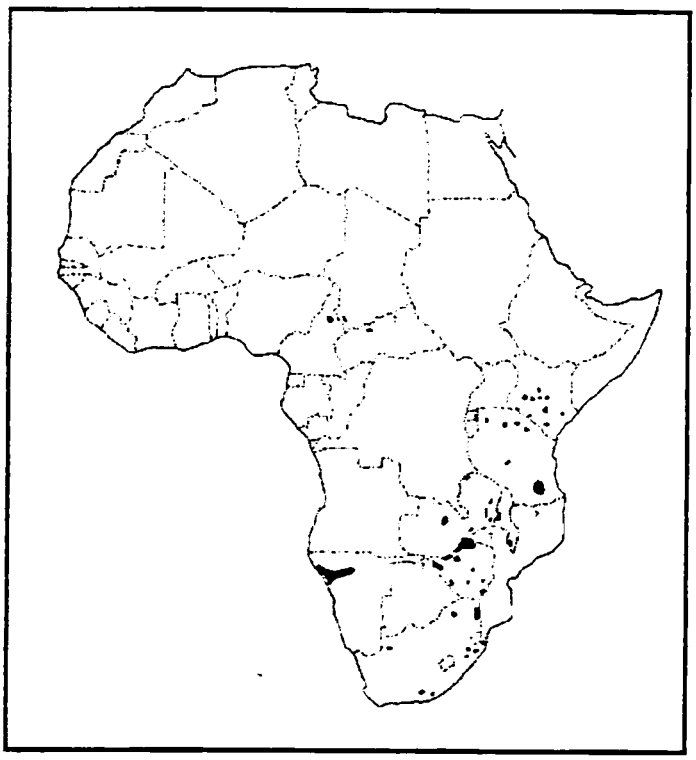


Figure 1.2b Distribution of the black rhinoceros in 1987 (adapted from Cumming 1987).

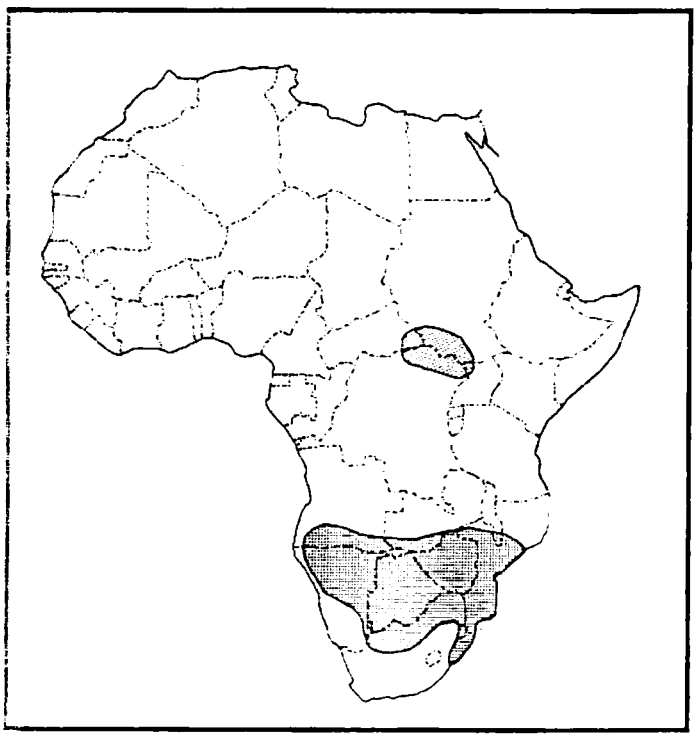


Figure 1.3a Probable distribution of the white rhinoceros around 1800.

Figure 1.3b Distribution of the white rhinoceros in 1987.

1.4 The Structure of the Action Plan

A key aspect of the plan is that it is based on the best available data. These are reviewed for rhinos in Chapters 2 and 3, and for elephants in Chapter 4. Chapter 5 is a review of the resources available for elephant and rhino conservation in selected African countries, and Chapter 6 examines the status of the trade in ivory and rhino horn. The implementation of the 1981 Hwange action plan is reviewed in Chapter 7. The action plan itself is presented in Chapter 8, and draws together the information presented in previous chapters to provide a coherent and realistic set of recommendations.

In addition, four appendices are presented as follows: 1. An analysis of conservation success (based on a model used for elephants in southern Africa); 2. List of papers presented at the AERSG Nyeri meeting; 3. List of AERSG members during the 1984-1987 IUCN triennium, and a list of invited guests to the Nyeri meeting; 4. Resolutions on rhino horn and ivory trade passed at the 6th Conference of the CITES Parties in Ottawa, July 1987.

Black rhino (Photo: Peter Jackson)

Chapter 2: A Review of Numbers of Black and White Rhinos in Africa

2.1 Introduction

A fundamental part of the conservation of an endangered species is knowing how many exist, where they are and whether the population is increasing, stable or declining. Monitoring populations of rhino in Africa is a key activity of the AERSG and is carried out mainly through the collation of information provided by members of the group and other contacts. Such information as is available also needs to be criticially reviewed and this was effectively done during plenary sessions at the Nyeri meeting of the AERSG.

The information under review was derived from questionnaires sent out towards the end of 1986 to AERSG members, to national parks and wildife agencies and to correspondents in all the countries in Africa which still have rhinos. The questionnaire included sheets which provided the information on numbers and distribution from earlier surveys and respondents were asked to correct and update this information where possible. Comprehensive contributions were made by some members at the meeting, particularly through the detailed data on South Africa and Namibia submitted by Martin Brooks. The data for each population were critically examined and the reliability of the estimates was assessed. Four categories of census reliability were used:

1. Total counts where the population was completely enumerated. This could be achieved in small and often open protected areas and where there were small recently introduced populations.

2. Estimate based on a rhino survey with the last 2 years. This category included sample surveys of the rhino population in question or attempts at complete enumeration.

3. Estimate based on a rhino survey carried out more than 2 years ago or on a recent (< 2 years ago) non-specific survey. The term "non-specific survey" referred to sample surveys carried out for other species, such as elephant, and in which counts of rhinos had been included.

4. Informed guess. This included estimates based on visits, ground reconnaisance and reports from persons with a knowledge of the area in question.

Trends in populations were assessed on the basis of survey figures available or where these were absent on the basis of information on poaching in the region or the area.

Northern white rhino (Photo: H. de Saeger/WWF)

2.2 Results

2.2.1 Numbers

The estimates of the numbers of black and white rhinos in Africa are summarised in Tables 2.1 to 2.3. The largest populations of black rhino now occur in Zimbabwe, South Africa and Namibia. The population estimate for Zimbabwe of 1,760 is based on uncorrected, non-specific aerial surveys (i.e. category 3 data). These populations which represent 50% or more of the continental population clearly need to be very much more accurately censused. The level of reliability of estimates of regional and continental numbers of black rhino is, to say the least, unsatisfactory (Table 2.4). Only 8% of the continental population estimate is based on fully accurate counts, another 14% is based on recent specific surveys while nearly 78% is based on unspecific surveys (66.4%) or informed guesses (11.5%).

2.2.2 Trends

The paucity of reliable and accurate census data casts some doubt on the detailed assessment of trends in black rhino populations. Some broad features are, however, clear and the overall drastic decline in the numbers of black rhino is not in dispute. Of the 59 discrete black rhino populations examined only seven were assessed as showing an upward trend, 11 were considered to be stable, 25 showed a downward trend, while in a further 16 populations the trend was either not known or the populations were established too recently to assess trend. Between 1981 and 1987 the black rhino population in Africa

Table 2.1 Numbers of black and white rhino in South Africa

Area	Size (km^2)	Black rhinos	Reliability of census	Recent trends	White rhinos	Reliability of census	Recent trends
Hluhluwe/Umfolozi G. Reserve	900	220	2	Down	1660	2	Up
Ndumu Game Reserve	100	42	1	Stable	60	2	Up
Mkuzi Game Reserve	251	70	3	Stable	40	3	Up
Itala Game Reserve	297	35	3	N/A	50	3	Up
Eastern Shores G. Reserve	800	10	1	N/A	0		
Weenen Nature Reserve	49	6	1	N/A	14	1	N/A
Kruger National Park	19485	140	2	Up	1200	2	Up
Augrabies National Park	650	5	1	N/A	0		
Addo Elephant National Park	77	17	1	Stable	0		
Andries Vosloo N. Reserve	65	4	1	N/A	0		
Pilanesberg Game Reserve	500	27	2	Up	222	2	Up
Queen Elizabeth Park	Paddock	0			2	1	N/A
Midmar Public Resort N.R.	13	0			3	1	N/A
Chelmsford Public Resort N.R.	40	0			5	1	N/A
Spionkop Public Resort N.R.	30	0			5	1	N/A
Loskop Dam N.R.	148	0			46	2	Stable
Bloemhof Dam N. Reserve	38	0			5	1	N/A
D'Hyala Nature Reserve	80	0			4	1	N/A
Rolfontein Nature Reserve	69	0			6	1	N/A
Thomas Baines N.R.	10	0			3	1	N/A
Kuruman Nature Reserve	9	0			3	1	N/A
Vryburg Nature Reserve	9	0			3	1	N/A
Willem Pretorius G. Reserve	120	0			16	1	N/A
Tussen die Riviere G.R.	220	0			9	1	N/A
Botsalano Game Reserve	58	0			39	2	Up
Tembe Elephant Reserve	300	0			4	1	N/A
Transvaal private land	N/A	1	1		525	2	?
Cape private land	N/A	0			15	2	?
Orange Free State pvt. land	N/A	0			20	2	?
Natal private land	N/A	0			103	1	?
Total		577			4062		

Notes: Reliability of Census:
1 = Total count
2 = Estimated based on rhino survey within last 2 years
3 = Estimated based on rhino survey carried out more than 2 years previously, or recent non-specific survey
4 = Informed guess

Recent trend refers to the past five years.
N/A: Population established too recently for trend to be assessed.
Estimates are those reported and reviewed at the Nyeri Meeting of AERSG, May 1987.

Table 2.2 Numbers of black and white rhinos in southern Africa (other than South Africa)

Area	Size (km^2)	Black rhinos	Reliability of census	Recent trends	White rhinos	Reliability of census	Recent trends
Angola		No data			0		
Botswana							
Moremi and Chobe areas	15380	<10	4	?	100-150	4	?
Malawi							
Kasungu National Park	2316	20	3	Stable	0		
Mwabvi Game Reserve	340	5	4	?	0		
Total		25			0		
Mozambique		v.low nbr		Down	0		Recently extinct
Namibia							
Etosha National Park	22270	350	3	Stable	0		
Damaraland	13000	5-8	2	Stable	0		
Kaokoland	3500	85-100	2	Up	0		
Waterberg National Park	400	0			28	2	Up
Private land	N/A	0			35	2	Down?
Total		440-458			63		
Swaziland					60-100	4	Down?
Zambia							
Kafue National Park	22400	20	4	Down	0		
Mweru-Wantipa National Park	3134	5	4	?	0		
Luangwa South N.P.	9050	50	3	Stable?	0		
Chindini Hills GMA	?	>6	3	Down	0		
Lukusuzi National Park	2720	5	4	Down	0		
Lumimba GMA	4500	>10	4	Down	0		
Luano/W. Petauke GMAs	13000	10	4	Down	0		
Livingstone Game Park	10	0			6	1	Down
Total		>106			6		
Zimbabwe							
Zambezi Valley	11000	750	3	Down	0		
Sebungwe Region	5000	650	3	Stable/Up	0		
Hwange/Matetsi	18400	>260	3	Stable/Up	110	3	?
Gonarezhou National Park	3900	75	3	Down	0		
Matopos National Park	432	5	1	N/A	28	1	Stable
Private ranches	N/A	14	1	N/A	26	1	Stable
Lake Kyle Recreation Park	90	0			30	3	Stable
Lake McIlwaine Rec. Park	61	0			8	1	Stable
Ngamo/Sikumi Forest Land	930	0			4	1	N/A
Cecil Kop Reserve		0			2	1	N/A
Total		>1754			208		

Notes: As for Table 2.1

Table 2.3 Numbers of black and white rhinos in West, Central and East Africa

Area	Size (km^2)	Black rhinos	Reliability of census	Recent trends	White rhinos	Reliability of census	Recent trends
Cameroon/Chad	5000	30	4	Down	0		
Central African Republic	N/A	10	4	Down	0		
Ethiopia/Somalia	N/A	?			0		
Kenya							
Amboseli N.P. and surrounds	800	10	1	Stable	0		
Nairobi National Park	117	>32	2	Stable	0		
Aberdare National Park	766	60	4	?	0		
Masai Mara National Reserve	1510	19	1	Down	0		
Meru National Park	870	>5	3	Down	6	1	Stable
Tsavo National Park	20200	150	4	Down	0		
Nakuru National Park	140	2	1	N/A	0		
Marsabit N.R.	140	5	4	Down	0		
Tana River	N/A	6	3	Down	0		
Ngeng Valley	N/A	18	2	Down	0		
North Horr	N/A	3	3	Down	0		
Nguruman Escarpment	N/A	5	3	Down	0		
Laikipia Ranch	350	47	1	Stable/Up	0		
Lewa Downs Ranch	20	11	1	N/A	1	1	N/A
Ol Jogi Ranch		7	1	N/A	0		
Solio Ranch	52	91	1	Up	40	1	Up
Mount Kenya National Park	700	50	4	?	0		
Total		>521			47		
Rwanda							
Akagera National Park	2500	15	4	Stable?	0		
Sudan							
Badingeru G.R.	5000	3	1	Down	0		
Tanzania							
Selous Game Reserve	55000	200	3	Down	0		
Lake Manyara National Park	320	5	4	Down	0		
Ngorongoro Conservation Area	8288	20-30	3	Down	0		
Ruaha N.P./Rungwa G.R.	27216	10	4	Down	0		
Serengeti N.P./Maswa G.R.	14763	<10	4	Down	0		
Rubondo National Park	457	20-30	4	Stable?	0		
Total		265-285			0		
Zaire							
Garamba National park	4900	0			22	1	Up
Continental totals (Tables 2.1-2.3)		**c. 3800**			**4568-4658**		

Notes: As in Table 2.1

Table 2.4 Numbers of black rhino in each region falling within each category of census reliability (see text for categories of reliability).

	Reliability of census data					
Region	1	2	3	4	Total	%
South Africa	85	387	105	0	577	15.3
Rest of Southern Africa	19	108	2161	65	2353	62.2
West, Central and East Africa	190	50	244	370	854	22.5
Total	294	545	2510	435	3784	-
Percentage	7.7	14.4	66.4	11.5	-	100

Table 2.5 Regional declines in black rhino populations between 1981 (from AERSG Hwange meeting) and 1987 (from AERSG Nyeri meeting).

	Numbers of black rhino		
Region	1981	1987	% decline
South Africa	625	577	7.7
Rest of Southern Africa	5,055	2,353	53.5
West, Central and East Africa	7,073	854	87.9
Total	12,753	3,784	70.3

Table 2.6 The size distributions of existing black rhino populations in three regions of Africa.

	Numbers of populations					Cumulative
Population Size	South Africa	Rest of S Africa	W, C & E Africa	Totals	%	%
< 10	4	8	11	23	38.3	38.3
10-25	2	4	8	16	26.7	65.0
26-50	1	1	4	6	10.0	75.0
51-100	1	2	2	5	8.3	83.3
101-200	1	2	2	5	8.3	91.6
201-400	1	3	0	4	6.7	98.3
> 400	0	1*	0	1	1.7	100.0
Totals	12	21	27	60	100.0	

(* The Sebungwe region population of 650 in Zimbabwe (Table 2.2) comprises three now probably discrete populations: Matusadona N.P. - 150; Chete Safari Area - 150; Chizarira N.P./Chirisa S.A. - 350.)

declined by some 70% with the greatest declines (88%) occurring in the West, Central and East African region (Table 2.5). In 1981 the black rhino population was estimated to be some three times greater than the white rhino population. By mid 1987 there were fewer black rhino in Africa than white rhino. In contrast to black rhino, the southern white rhino populations have continued to show clear upward trends in all but a few instances. The white rhino population of South Africa has increased from an estimated 2,500 in 1981 to 4,062 in 1987. Numbers in Botswana, Namibia, Swaziland and Zimbabwe have increased while the species has become extinct for the second time in Mozambique and some of the animals in the Livingstone Game Park in Zambia have been killed. The entire southern white rhino population in Africa was estimated to number 4,560 (which includes 40 animals on Solio Ranch in Kenya) as compared with an estimate of 2,861 animals in 1981 - an increase of 59% or 8% per annum.

The northern white rhino has not fared so well. By 1983 it was clear that the subspecies was on the brink of extinction in the wild. The Garamba population had dropped to only 12 animals and there was no evidence of survivors in the southern Sudan. The decline of the of the once large population in the Garamba National Park was arrested in 1984 has now increased to 22 during the last four years.

2.2.3 Population sizes

The rapid decline in numbers of black rhino has been accompanied by an equally alarming fragmentation into small populations of dubious viablity. Some 75% of the 60 discrete populations reviewed (Tables 2.1 to 2.6) comprised less than 50 animals (Table 2.6). Only one population comprises more than 400 animals. On the basis of the criteria outlined by Du Toit, Foose and Cumming (1987) none of the countries in Africa now carries a Minimum Viable Population (MVP) of 2,000 animals and only the southern central population (Natal to Southern Tanzania) exceeds this level. These data have important implications for the management of rhino populations in Africa apart from the immediate problem of protection.

2.3 Conclusion

Although the broad trend of major declines in black rhino populations and encouraging population growth of the southern white rhino are clear, the information on numbers for most populations of black rhinos remains sketchy and out of date. This situation must be corrected if sound decisions are to be taken on conservation action for the remaining wild rhino populations.

Chapter 3: Conservation Priority Ranking of Black Rhino Populations

3.1 Introduction

The review of black rhino population numbers and trends (Chapter 2) revealed that only seven of the 59 populations examined had shown an upward trend. The remaining 52 populations were either stable (11), declining (25) or their status was unknown (8). A further 8 populations had been established too recently to assess their trend. Given the alarming decline in black rhino over much of their range (Chapter 2)and the limited resources available to combat the problem (Chapter 5) it is clearly desirable, if not necessary, to define priorities for conservation action. Setting such priorities is complicated by the range of scientific, aesthetic and practical considerations that impinge upon and influence individual or group decisions. Consensus within a diverse group, such as the AERSG, can be greatly facilitated by using a structured framework of questions and scores to establish priorities for conservation action in the field. The initial system for ranking rhino and elephant populations stimulated by Parker's (1984) presentation and used so successfully at the 1981 Hwange meeting (Cumming and Jackson, 1984) had a number of shortcomings. Questions about conservation status of areas and their rhino populations were not always answered consistently between countries or at different times. The questions and scores on economic and national factors affecting populations and areas faced similar difficulties and the three-dimensional array could not easily be used during a meeting without a computer. Many of these problems were highlighted at the Luangwa AERSG meeting in July 1986 when the previous scores, and attempts to revise them, could be examined with the value of hindsight. The Hwange system was successfully modified to examine priorites for protected area management at the 1984 Annual Ecologist's Meeting of the Branch of Terrestrial Ecology in the Zimbabwe Department of National Parks and Wildlife Management. A four-dimensional structure was later outlined by Cumming (1984). The system was further modified and improved by Bell and Martin (1987), again primarily to establish priorities for protected areas or potential protected areas. The system devised by Bell and Martin (1987) was not easily used for rhino populations in a workshop with limited time and imformation. This was apparent at the Luangwa AERSG meeting where a much simpler system based largely on population sizes was eventually used. Because of these various difficulties with previous scoring and ranking systems, R.B. Martin developed a revised system for the Nyeri meeting which aimed to:

1. Emphasise scores of the more objectively measured parameters such as population size, financial expenditures and resources of manpower and equipment.
2. Simplify the choices in the more subjective areas of political climate, law enforcement, and civil security.
3. Introduce more explicit weighting factors for positive and negative influences on conservation effectiveness.

An initial attempt to apply this system to rhino at the Nyeri meeting foundered because for many areas the requisite financial information was not available, it took too long to score each population and a consensus could not be reached on some of the assumptions in the system. The assumption that for conservation to be successful a minimum level of funding was necessary was the major point of controversy. In the light of the debate which ensued in trying to apply the scoring and ranking procedure, coupled with the constraints of time, a simpler approach was adopted at the meeting (see below). The system developed by Martin was applied successfully to some elephant populations in southern and eastern Africa by the southern African working group (see Chapter 4). It is acknowledged that composite indices of this sort inevitably contain an element of subjectivity that should not be obscured behind the impression of numerical precision. However, the purposes of calculating and using such indices is to introduce rational, dispassionate thinking into the process of setting priorities and to reduce arbitrary, subjective elements as much as possible. A primary function of such excercises is to make the rationale for choices explicit and so aid in reaching consensus about priorities for conservation action.

3.2 Priority Ranking System Used at the 1987 Nyeri Meeting

The major basis for ranking black rhino populations in order of priority was a score for biological importance which considered present and potential population size, genetic rarity, and diversity of the ecosystem occupied by the population in question. Subsidiary considerations involved very subjective evaluations of the likelihood of conservation action being successful and the need for funding or support.

3.2.1. Biological importance

The scoring for biological importance was based on three criteria, namely, population size, genetic rarity, and diversity of the ecosystem holding the population in question.

i. Population size

Both the current and the potential population size in each area were considered and combined into a single index. It was considered desirable to include a weighting for those large protected areas which might presently have very low popula-

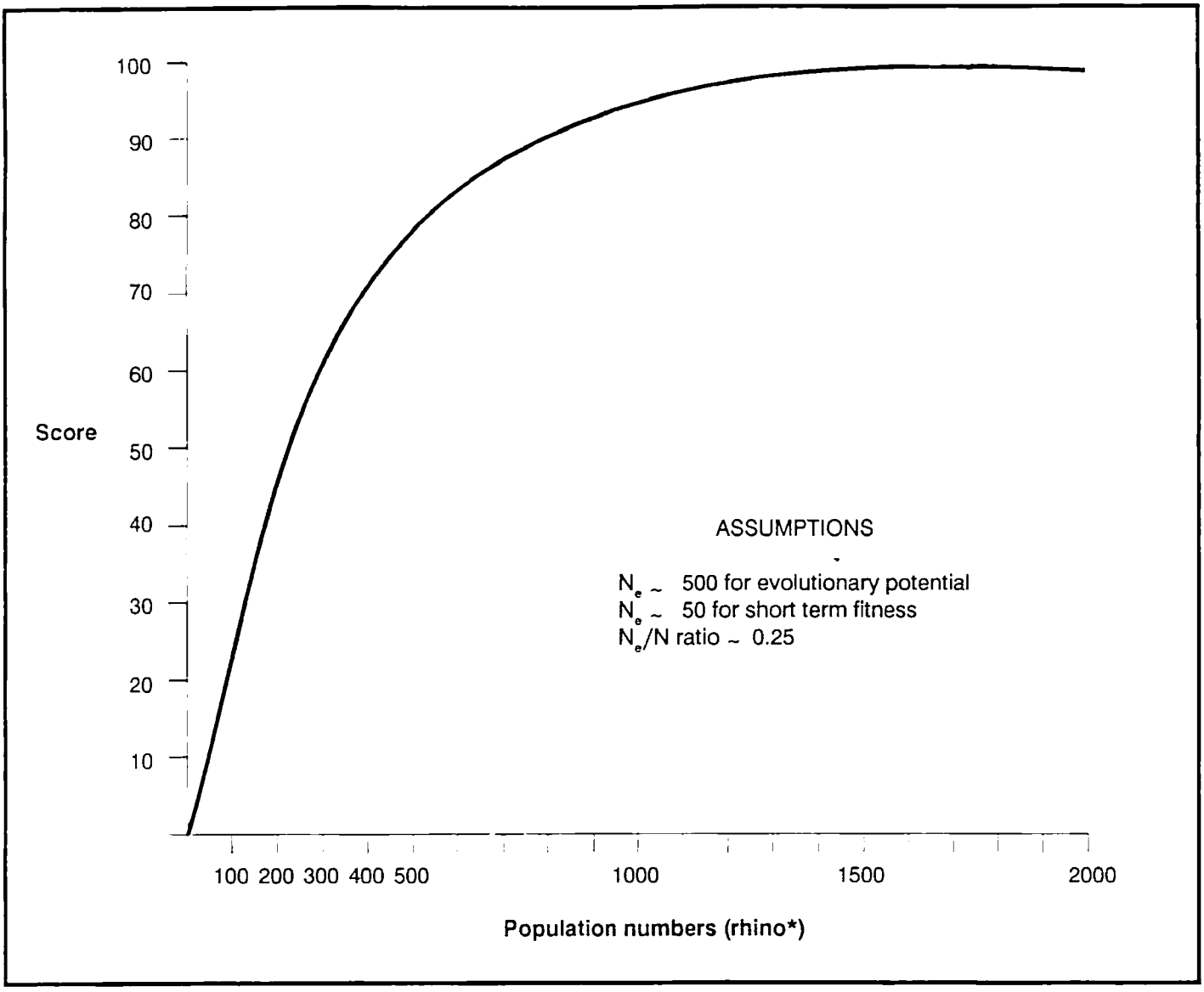


Figure 3.1 A population score curve to relate biological importance scores to population size.

* For elephant, numbers are multiplied by 10

tions but which without poaching could carry large populations of rhino. To establish the potential population size, the area available for rhinos was mutiplied by a density of 0.33 rhino/km^2 except in arid zones where a density of 0.25 rhino/km^2 was used. A density of 0.2 rhino/km^2 was used for Damaraland and the Kaokoveld in Namibia. Scores for present and potential population size were read from a population score curve (Fig. 3.1), summed and divided by 4, that is:

$$\frac{\textit{present population score} + \textit{potential population score}}{4}$$

The population score curve is based on the simplest curve to reach an asymptote of 100 at a population size of 2,000 starting at a score of 1 for a population of 1. The figure of 2.000 (N) is based on the assumption of a minimum effective population size (N_e) of 500, with an N_e/N ratio of 0.25, for long term evolutionary potential. The curve is described by:

$$\textit{Population score} = 2{,}000 \times (1 - e^{-0.003n})$$

where n = population size.

ii. Genetic rarity

In keeping with the results of the rhino workshop held in Cincinnati in October 1986 (Du Toit, Foose and Cumming, 1987), and until more is known about the genetic and ecological differences within the species, an interim classification of four black rhino ecotypes or "subspecies" conservation units was recognized:

a. The south-western populations in Namibia and the Cape Province of South Africa (genetic rarity score = 12);

b. The southern-central populations extending from Natal through to Zimbabwe, Zambia and into southern Tanzania (genetic rarity score = 3);

c. The eastern populations in Kenya and northern Tanzania (genetic rarity score = 9);

d. The northern and western populations extending from the horn of Africa to the Central African Republic and Cameroon (genetic rarity score = 9).

iii. Ecosystem diversity

A rough evaluation was made of the combination of other faunal and floral features of each area that added to its overall conservation importance. Scores ranged from 10 points for rare and diverse ecosystems to 2 points for common ecosystems of limited diversity. The scores awarded to each population and its area for population size, genetic rarity and ecosystem diversity were added to derive a score for biological importance (Table 3.1).

3.2.2. Success probability of conservation measures

Recent trends in the rhino populations, available knowledge of poaching pressures, and the commitment and operational efficiency of the responsible wildlife agencies were used by the AERSG meeting at Nyeri to assess the likelihood that additional assistance from external agencies would be effective in conserving rhinos in each area. The populations were categorized according to the probability (low, moderate or high) of maintaining the populations at current or higher levels through the provision of funds or other support. The category into which a population was placed was based on information available to the working group and to plenary sessions at the Nyeri meeting.

3.2.3. Requirements for external assistance

Each area was further assessed according to the actual requirement for external assistance, taking into account the poaching pressures and capabilities of the responsible wildlife agencies to protect the rhinos with their current resources. Again these were simply rated as high, moderate or low requirements.

3.3 Results and discussion

The scores for each of the 38 populations examined are shown in Table 3.1. The final priority ranking of populations is shown in Fig. 3.2, with biological importance on the vertical axis, and the areas grouped into three columns according to anticipated effectiveness of funding. The data contained in Table 3.1 and particulary in Fig. 3.2 provided the basis for examining priorities for field action for black rhino populations. The priorities finally agreed upon at the Nyeri meeting (Chapter 8) represented a compromise between the priority positions reflected in Fig. 3.2 and additional considerations which emerged in plenary discussion. The apparent discrepancies between scores and positions in Fig. 3.2 and the final priorities in the action plan (Chapter 8) reflect the way in which the AERSG has used its scoring systems. The systems for scoring and ranking populations do not provide a magic touchstone for arriving at priorities. The systems do, however, provide a framework on which which to base rational discussions and reach a sensible ordering of priorities for conservation action which is likely to be more widely accepted.

Black Rhino (Mark Boulton/ICCE/WWF)

Table 3.1 Priority ranking scores for black rhino populations: AERSG Nyeri meeting, May 1987

Black rhino population	Area	Population size		Biological Importance Scores					Total score	Rating for:	
	(km^2)	Present	Potential	Present pop.(A)	Potent. pop.(B)	Pop Score (A+B/4)	Genetic Rarity	Ecosyst Divers.		Prob. success	External assistance
Etosha National Park	22,270	350	5,567	65	100	41.25	12	6	59.25	2	0
Zambezi Valley (Zimbabwe)	13,000	750	4,290	85	100	46.25	3	8	57.25	1	2
Sebungwe complex	10,000	600	3,300	78	100	44.5	3	6	53.5	1	1
Tsavo National Park	20,200	150	5,050	40	100	35	9	6	50	1	2
Damaraland/Kaokoveld	70,000	90	14,000	24	100	31	12	10	53	1	1
Chirisa S.A./Chizarira N.P.	3,600	350	1,188	65	95	40	3	6	49	2	1
Hwange National Park	14,000	300	4,620	60	100	40	3	6	49	2	1
Cameroon/Chad	5,000	30	1,650	15	98	28.25	9	9	46.25	0	2
Selous Game Reserve	55,000	200	18,150	50	100	37.5	3	6	46.5	0	2
Kruger National Park	19,485	140	6,430	38	100	34.5	3	6	43.5	2	0
Ngorongoro Conservation Area	8,300	25	2,739	10	100	27.5	9	6	42.5	0	1
Bouba-Njida National Park	2,200	25	726	10	84	23.5	12	6	41.5	1	2
Luangwa Valley complex	16,600	75	5,478	20	100	30	3	6	39	1	2
Masai Mara National Park	1,510	19	498	6	90	24	9	6	39	1	1
Gonarezhou National Park	5,000	75	1,650	20	98	29.5	3	6	38.5	1	2
Kafue National Park	22,400	20	7,392	7	100	26.75	3	8	37.75	0	2
Matusadona National Park	1,407	150	464	40	75	28.75	3	6	37.75	2	1
Umfolozi/Hluhluwe complex	900	220	297	53	61	28.5	3	6	37.5	2	0
Aberdares National Park	700	60	231	17	55	18	9	8	35	1	1
Mount Kenya National Park	700	40	231	14	55	17.25	9	8	34.25	1	0
Matetsi Safari Area	4,400	12	1,452	3	97	25	3	4	32	2	0
Akagera National Park	2,500	15	825	4	87	22.75	3	6	31.75	0	2
Chete Safari Area	810	150	267	40	58	24.5	3	4	31.5	1	1
Kasungu National Park	2,300	20	759	7	86	23.25	3	4	30.25	1	1
Augrabies National Park	650	5	162	1	53	13.5	12	4	29.5	2	0
Meru National Park	870	5	287	1	60	15.25	9	4	28.25	1	2
Amboseli N.P. and surrounds	400	11	132	3	33	9	9	6	24	1	1
Laikipia Ranch	350	47	115	15	27	10.5	9	4	23.5	2	1
Solio Ranch	62	91	20	24	18	10.5	9	4	23.5	2	0
Addo National Park	80	17	26	6	28	8.5	9	4	21.5	2	0
Rubondo Game Reserve	460	25	151	10	39	12.25	3	6	21.25	1	1
Eastern Shores Game Reserve	800	10	264	3	50	13.25	3	4	20.25	1	1
Nairobi National Park	120	40	39	14	14	7	9	4	20	2	0
Pilanesberg National Park	500	27	165	7	41	12	3	5	20	2	0
Mkuzi Game Reserve	251	70	82	19	23	10.5	3	6	19.5	2	0
Nakuru National Park	140	20	46	5	9	3.5	9	6	18.5	2	1
Itala Game Reserve	297	35	98	10	25	8.75	3	6	17.75	2	0
Manyara National Park	320	5	105	1	26	6.75	3	6	15.75	0	2
Ndumu Game Reserve	100	42	33	13	10	5.75	3	6	14.75	2	0

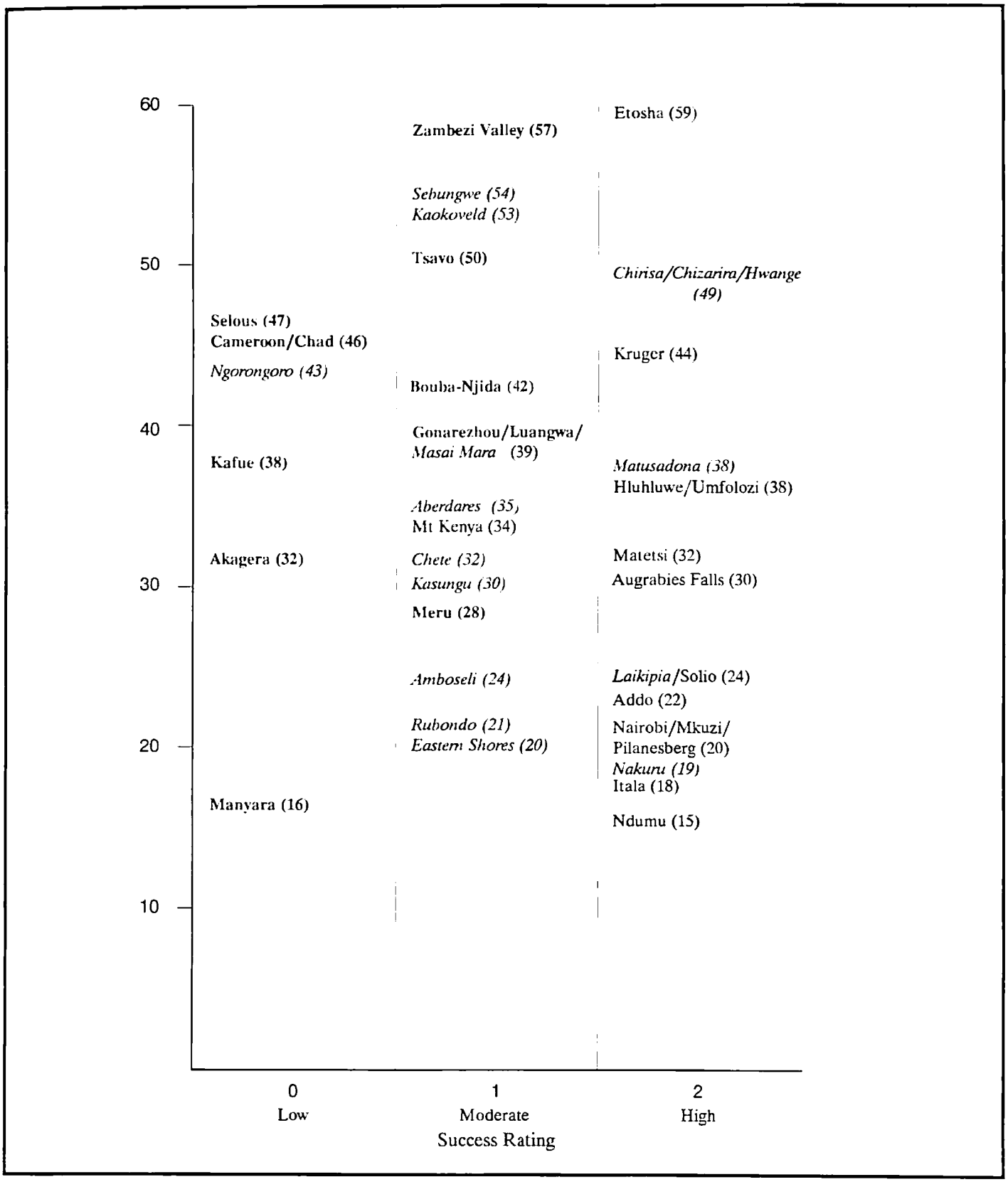


Figure 3.2 Priority ranking scores and positions for black rhino populations. Scores for biological importance (see text and Table 3.1) are shown on the vertical axis. Populations are further arranged into three columns on the basis of the likelihood (low, moderate or high) of support being effective. Populations with a high or immediate requirement for assistance are shown in bold print, those with a moderate requirement in italics, and those with no immediate requirement in normal script.

Conservation in Africa

Many African countries have proclaimed a large proportion of their land as national parks or equivalent protected areas. In eastern and southern Africa this proportion varies from 8% to as much as 17%. Few developing countries, however, have the financial and manpower resources to manage these areas as they would wish. A comparative study of various indicators of resources available to agencies (e.g. annual budgets, manpower, and equipment per man and per unit area managed) provides a useful starting point for gauging the resources necessary for succesful conservation and protected area management. Not only do conservationists seldom appreciate just how much it does cost to protect and manage national parks and equivalent areas, but they also seldom appreciate how much African governments spend on conservation. Comparative analyses of the resources available for conservation need to be extended to provide a sounder basis on which to assess the true costs of conservation action in Africa.

A questionnaire, very similar to that used for the 1981 AERSG meeting at Hwange (Cumming, Martin and Taylor, 1984), was sent to individuals and government agencies in 47 countries prior to the AERSG Nyeri meeting. The survey aimed to update and extend the information contained in the earlier survey on the resources of funds, manpower and equipment available to conservation agencies in Africa. In addition the questionnaire covered other aspects relating to policy and law enforcement for the conservation of elephants and rhinos.

Returns were received from only 14 countries and of these only three countries were covered in the previous survey. Despite the small size of the sample it does achieve a good spread across Africa and provides some insights into the problems faced by many conservation agencies. The budgets, manpower and equipment available to 13 conservation agencies (for which sufficient information was provided) are summarised in Table 5.1, while some policy and economic factors impinging on elephant and rhino conservation are summarised in Table 5.2. It is apparent from the data contained in Table 5.1 that there is a wide range in the availability of manpower, equipment and funds for wildlife conservation in the 13 countries surveyed.

5.1 Manpower

Bell and Clarke (1984) suggested a law enforcement staff density of 1: 50 km^2 as a minimum requirement for areas containing elephants and a density of 1: 20 km^2 for areas containing high priority species such as rhinos and gorillas. Some of the surveyed countries (Table 5.1) are within or close to these manpower requirements (South Africa, Zimbabwe, Malawi, Cameroon and Burkina Faso), but in a number of other countries the manpower density is well below such an effective level (notably in Mozambique, Niger, Central African Republic, Congo and Zaire (apart from Garamba National Park)). To the list of countries with inadequate manpower for elephant and rhino protection could probably be added most of those which did not return questionnaires.

The efficiency of wildlife agencies obviously depends as much on the morale, discipline and level of training of staff as on the number of men and the availability of logistical support for field operations. Table 5.2 shows considerable variation in salaries paid in the various wildlife agencies. In some cases the monthly salary is well below that required to support a man and his family and is less than the value of a single kilogram of ivory. In-service training facilities are generally deficient; where training is arranged, this usually consists of basic para-military courses. The Garoua (Cameroon) and Mweka (Tanzania) colleges for more advanced training appear to be important channels through which wildlife management training is imparted to middle and senior level wildlife officials in central and east African countries.

5.2 Equipment

The general shortage of manpower is aggravated by insufficient vehicles and other equipment to allow those men who are in the field to operate effectively. With the lack of employment opportunities in many African countries and the consequent willingness of citizens to work for very low salaries, wildlife agencies are able to employ relatively large staffs on limited budgets, but cannot acquire equipment such as vehicles, firearms and radios which must be imported. This situation is typified by Sudan, where the Wildlife Conservation and National Parks Forces can achieve a manpower density in the Sudanese wildlife area of 1 man: 85 km^2, but can only supply one truck or 4-wheel drive vehicle for every 17,000 km^2.

The wildlife agencies of Malawi, South Africa and Zimbabwe are reasonably well-equipped, and the equipment situation in Tanzania's national parks is also relatively good as a consequence of foreign aid.

5.3 Funds

Parker (1979) and Bell and Clarke (1984) estimated that the minimum level of recurrent expenditure that wildlife agencies must maintain to protect adequately areas under their control is U.S.$ 200 per km^2 per annum. Of the countries that were surveyed, only South Africa is maintaining expenditure above this level (Table 5.1). Zimbabwe has dropped below this level recently to U.S.$ 194 per km^2 in 1986-87, whereas in 1980-81,

Table 5.2 Socio-economic conditions for wildlife conservation

Country	*Elephant protection*			*Economic importance of wildlife to nation*			*Service conditions in wildlife agency*			
	Elephant hunting allowed	Cost of hunting permit US$ (1)	Penalty for poaching in national park	Wildlife-based tourist industry	Sport hunting industry	Direct return of revenue to local development funds	Salaries (US$ per year) Guard (2)	Salaries (US$ per year) Warden (3)	In-services training facilities	Morale
Burkina Faso	No	N/A	Up to $2800 + 2-3 yrs prison	Small. $100000 p.a.	Small?	Some	1720	3240	Some	Moderate
Cameroon	Yes	1000	?	Significant	Moderate	Nil	1400	4200	Some	Moderate
Central African Rep.	No	N/A	$2900 and/or 1 year prison	Significant. $1 million p.a.	Small. $100000 p.a.	Nil	1240	2220	None	Low
Congo	Yes	360	$30 +	Virtually collapsed	Virtually collapsed	Nil	?	?	Some	Low
Guinea	No	N/A	$140	Insignificant	Insignificant	Nil	?	?	None?	Low
Liberia	No	N/A	?				200	430	None	Moderate
Malawi	No	N/A	$110 or 1 year prison	Small. $107000 p.a.	Insignificant.	Some ($50000)	410	1100	Some	Moderate
Mozambique	Yes	125	$325 (not enforced)	None since 1981	Collapsed	Nil	150	360	None?	Low
Niger	No	N/A	Law enforcement almost non-existant	Very small	Nil	Nil	850	2200	None	Low
South Africa (Natal)	No	N/A		Considerable. $450 million p.a. for S.A. as a whole.	Significant. $1.75 million p.a. in Natal alone.	Nil	1860	7830	Well-organised	High
Sudan	Yes	400	$2000	Small	Small	Some	430	880	None	Improved
Tanzania (National Parks only)	Yes (Outside NP's)	1000 + tax on ivory	2 years prison	Important relative to Tanzania's economy but small relative to potential	Important relative to Tanzania's economy but small relative to potential	Nil	170	370	Some	Low
Zaire	No	N/A	Law enforcement almost non-existent	Insignificant	Insignificant	Nil	96	780	None?	Low
Zimbabwe	Yes	1800		Considerable $60 mill. p.a.	Significant. $4.2 million	Yes. $330,000 in 1986 = $0.24/ha	1580	7660	Some	Variable

Notes: 1. Cost to non-resident (excluding fees of safari operator). 2. Guards = scouts, gards, cadres, pisteurs. 3. Wardens = officers, conseillers, conservateurs.

Table 5.1 Indicators of resources available to government agencies for conservation

Country	Area km² protected (1)	*Budget US$ x 1000* Total (2)	Operational (3)	Total field staff (4)	*Vehicles* Aircraft	5t. truck	4-wheel Drive	Total budget/ km² US$	Operational budget/ man US$	km²/ man	km²/ truck or 4-wheel drive	Foreign aid
Burkina Faso	1220	161	43	57	0	1	7	132	750	21	153	Yes
Cameroon	24000	118	?	446	0	4	5	5	?	54	2667	Yes
Central African Rep.	270000	1267	117	400	0	1	8	5	290	675	30000	Yes
Congo	13390	?	29	50	0	0	2	?	580	268	6695	No
Liberia	1309	?	?	19	0	0	1	?	?	69	1309	Yes
Malawi	10800	526	198	191	1	14	22	49	1037	57	300	Yes
Mozambique	65700	448	?	58	0	2	6	7	?	1133	8212	No
Niger	82000	?	12	24	0	2	4	?	500	3417	13667	Yes
South Africa (Natal)	2800	12182	2727	730	1	82	93	4350	3736	4	16	No
Sudan	85000	1060	190	1000	0	2	3	12	190	85	17000	No
Tanzania (Nat. Park)	39100	700	450	359	4	16	58	18	1253	109	528	Yes
Zaire (Garamba N.P.)	5000	9.4	1.4	217	Aid	vehicles	only	2	6	23	—	Yes
Zimbabwe	47000	9117	2455	1380	5	57	121	194	1779	34	264	Yes

Notes: 1. This may not be the total area reserved for wildlife conservation in a country, but only the area of operation of a wildlife agency for which details were provided.
2. Total annual allocation (generally for 1986) for salaries, travel allocation (vehicle running costs, subsistence, etc.), recurrent costs (road maintenance, fire control, camp upkeep, etc.), and capital expenditure. Excludes foreign aid.
3. Total annual allocation for travel/subsistence and recurrent costs only. Excludes foreign aid.
4. Excludes head office staff and casual labourers.

expenditure was U.S.$ 277 per km² of designated wildlife area. The levels of area-related expenditure in most other African countries are less than a tenth of the recommended minimum. While it could be argued that the figure of U.S.$ 200 per km² can be reduced for areas with high tourist development and/or local populations that actively assist anti-poaching efforts, these situations are very rare.

A further indication that African wildlife agencies do not have adequate operational and logistical support is the very low average expenditure per staff member (Table 5.1). In all countries, over half the total annual budget of the wildlife agency is made up of salaries (in Central African Republic the proportion is over 90%) and therefore the budgetted apportionments nowhere conform with the recommendation of Bell and Clarke (1984) that recurrent expenditure should be divided more or less equally between salaries and operational expenditure. With the high inflation rates in Africa, it is a common tendency for salaries to rise while total allocations to wildlife agencies remain constant. Thus, for example, 50% of total recurrent expenditure in Malawi in 1983 was allocated to staff salaries (Clarke, 1983) but the salary component has now risen to 57%.

It is difficult to evaluate foreign aid inputs in relation to government allocations for wildlife agencies in the various countries to which aid is provided, since foreign assistance generally comes in the form of irregular inputs (often equipment) for specific projects. It appears that aid contributions to annual operational expenses in most of these countries in 1986-87 amounted to less than 10% of the total government allocations.

Three of the countries that returned questionnaires were also surveyed in 1981 (Cumming, Martin and Taylor, 1984). Comparisons of total budgets are given in Table 5.3.

Table 5.3 Comparison of wildlife agency budgets for three countries for 1981 and 1987 (U.S.$ 1,000) (no allowance made for change in value of U.S.$)

Country	1981	1987
Central African Republic	460	1,267
Mozambique	600	448
Zimbabwe	13,000	9,117

Southern white rhino (Photo: South African Tourist Corporation/WWF)

5.4 Management and Protection Policies

The hunting of elephant is allowed in six of the 14 countries from which questionnaires were returned (Table 5.2). This refers essentially to sport hunting; in all countries elephants are shot in protection of people and crops. Control hunting is undertaken by government staff (although Sudanese citizens can kill marauding elephants provided they report their actions to wildlife officials), and invariably the meat is given or sold cheaply to the local people while the tusks are taken by the state. Black rhinos cannot be legally hunted in any country, while white rhinos can be hunted on licence in South Africa and Zimbabwe.

The cost of elephant hunting permits varies greatly among the countries that allow sport hunting, with some countries seriously undervaluing their elephants. Zimbabwe has the highest licence fees, and the revenue derived from elephant hunting is further increased because trophy bulls are offered only on the longer safaris, hence generating the maximum possible number of "hunter-days".

Elephant skin is not considered as a valuable resource except in southern Africa where the dried, salted, skin of an elephant is worth about U.S.$ 600. No concerted effort is made elsewhere in Africa to process the skins of elephants shot on safaris or control work.

The full value of the elephant resource is seldom realized in countries with depressed economies. The mechanisms for using the resource in a controlled and profitable way (through tourism, sport hunting or cropping) to promote species conservation have not been developed. A vicious circle exists: wildlife tourism and safari hunting could generate substantial foreign currency in most of these countries, but poor security and low government investment preclude the establishment of the necessary infrastructure.

Penalties for elephant and rhino poaching are also very low in these countries. Poachers can sell ivory at prices that make the risk of prosecution worth taking. Poaching is further aggravated by the low average incomes in these parts of Africa. The incentive to poach is often increased by extremely weak law enforcement, and lack of cooperation between court officials, police and wildlife staff.

5.5 Identified Deficiencies

The responses to a question on the fundamental weakness in the effective enforcement of protection for rhinos and elephants in each country can be classified as follows:

5.5.1 Staff problems

- Insufficient manpower in wildlife agencies (Zimbabwe, Liberia, Guinea).
- Insufficiently motivated staff (Niger, Zaire, Tanzania, Central African Republic).

5.5.2 Equipment problems

- Insufficient equipment to combat poaching (Sudan, Zimbabwe, Liberia, Cameroon).

5.5.3 Law enforcement problems

- Wildlife legislation weak (Malawi, Cameroon, Zaire).
- Law enforcement agencies not operating efficiently or courts not imposing sentences strictly (Liberia, Mozambique, Tanzania, Zaire).

5.5.4 Political problems

- Government not supporting wildlife conservation sufficiently (Guinea, Central African Republic).
- Populace lacking conservation awareness (Mozambique, Burkina Faso, Central African Republic).
- Neighbouring states not cooperating in controlling cross-border poaching (Zimbabwe).

5.5.5 Trade problems

- "International trade causing poaching" (Congo, Tanzania).

It is clear that on a continental level measures for protection of elephants and rhinos are totally inadequate, and the economic benefits of wildlife are hardly being realized, except by poachers and illegal dealers. There is no evidence that the situation has improved over the last six years and this is reflected in the continuing downward trends in both rhino and elephant populations (see Chapters 2 to 4).

Chapter 6: A Review of the Ivory and Rhino Horn Trades

Ivory and rhino horn are valuable products. The value of raw ivory in Africa can exceed U.S.$ 250 per kg while rhino horn is valued at between U.S.$ 750 and U.S.$ 1,000 per kg. The illegal trade in rhino horn has been almost entirely responsible for the drastic decline of black rhino over most of its range in Africa during the last 15 years. The illegal trade in ivory now greatly exceeds the legal trade and Africa's elephants are consequently being harvested at rates far higher than can be sustained. An important AERSG responsibility is to assist in the study and monitoring of the ivory and rhino horn trades. The topic has been addressed at each of the AERSG meetings and in studies conducted by members of the Group. At the request of the CITES Secretariat reports were prepared on the ivory quota system and on the rhino horn trade for the 6th Conference of the CITES Parties held in Ottawa, Canada, in July 1987.

These reports are presented below with some subsequent updating. The original reports provided the background documents to the development of six resolutions of the Conference of the Parties relating to the ivory trade and conservation of elephants and to a major resolution on the rhino horn trade and the conservation of rhino. The text of these resolutions is contained in Appendix 4.

The report on elephant numbers, trends and the ivory quota system is based on material presented and generated at the AERSG Nyeri meeting in Kenya, in May 1987, and was written by R.B. Martin and D.H.M. Cumming and presented on behalf of the AERSG. Likewise the report on the trade in rhino horn was prepared by E. Bradley Martin from his continuing studies of the problem and with critical input from the Nyeri meeting.

6.1 Elephant Population Estimates, Trends, Ivory Quotas and Harvests

6.1.1 Population estimates

For the purposes of this analysis of the ivory trade and quota system, estimates for African elephant population (Table 6.1) were taken from the AERSG meeting held at Hwange in 1981, R.B. Martin's report to the CITES Secretariat on the quota system in 1985, and the AERSG meeting held at Nyeri, Kenya, in May 1987. The UNEP/GRID estimates prepared by I. Douglas-Hamilton and A. Burrill are shown in Table 6.2, though these were not available at the time the analysis was carried out. Notes on these estimates follow.

The West African data are not particularly significant in the context of the CITES quota system. The West African population is less than 3% of the total African population, and no countries from West Africa have set ivory export quotas. The data for all the countries are too poor to allow a meaningful statement of population trend.

The Central African data are equally poor. The Zaire elephant population could lie anywhere between 100,000 and 800,000 animals. The apparent increases in the Cameroon, Congo and Gabon elephant populations over the past 6 years are a reflection of improved estimates rather than any real increase. Recent work by R. Barnes suggests that the Gabon population is about 55,000 animals; however the Gabonaise authorities have estimated the population at 93,000 in their latest quota submission and the AERSG group working on Central Africa put the population at 76,000. This serves to illustrate the level of accuracy involved.

In East Africa there has been no recent survey for Ethiopia and the estimate of the Wildlife Conservation Organisation for their quota submission has been taken to apply to all three years. The Kenya decline from 65,000 elephants to 35,000 elephants is spectacular and data can be expected to be better than for most countries. The 1987 Somalia estimate of 6,000 is no more than an educated guess based on reports of deteriorating range conditions in the country. Similarly, the latest estimate of 40,000 elephants in the Sudan has no sound backing. The Tanzania estimates since 1981 are doubtful, but if the decline in the Selous Game Reserve population can be taken as an indicator, elephants are unlikely to be present at densities greater than 1 per sq km anywhere in Tanzania. Recent estimates by the government (quota submission) of 20,000 elephant in Rungwa (1,200 sq km) and 50,000 in Moyowosi (6,000 sq km) are unlikely. In the Southern Region, estimates vary from excellent to very poor. Counts in Botswana, South Africa, Namibia and Zimbabwe are likely to be fairly accurate, whilst in Zambia, Mozambique and Angola the information is either incomplete or absent. The 1987 estimates are summarized in Table 6.2.

It would appear that the African elephant population has decreased by some 36% since 1981. However, it is stressed that the data for some of the largest populations on the continent (e.g. for Zaire) are extremely crude. It is necessary to point out that the population estimates critically affect the deductions made later in this report. If indeed elephant populations in certain countries (Zaire, Sudan, Kenya, Tanzania, Mozambique and Zambia) have declined as greatly as the AERSG figures indicate, then this implies very large quantities of ivory entering the world market.

6.1.2 Trends

The data for individual countries in the Western and Central regions are not good enough to present clear trends. The

one country, where there is no policy to cull, crop, or control problem elephants, large numbers in each of these categories have been entered.

Very good submissions were received from Chad, Congo, Ethiopia, Malawi, Zambia and Zimbabwe. These reflect the management policies of the countries and are biologically realistic.

6.1.7 Conclusions

There is undoubtedly a massive illegal ivory trade operating over and above the legal quota system. Some criticisms have been levelled at the quota system because of this. This is not logical. The quota system was the brainchild of the producer countries, and it was an attempt to bring this situation under control. Properly used, the quota system is no more than a statement of intent by producer countries arising from their management policies. It appears to be working in those countries where law enforcement is effective. More importantly the quota system, in conjunction with data on elephant numbers and trends, has provided the means for determining the extent of both the legal and illegal trade in ivory. This data can provide basis for programmes to reduce and eventually eliminate the illegal trade in ivory.

It may be tempting for Parties to propose a complete ban on the ivory trade. The futility of pursuing a legal export system while the vast bulk of trade remains illegal appears to provide sound grounds for such an action. Nevertheless, such a proposal is unlikely to succeed and the following points need to be taken into account:

- It is apparent that the illegal trade is already highly successful. A ban would not work. It has not worked for rhino horn.
- The investment in ivory worldwide is too great to countenance a ban. Such an action may well result in the withdrawal of several Parties from the convention.
- It is highly undesirable for all trade to become illegal. This leads to a situation where nothing can be monitored or controlled.
- The quota system is in its infancy and the illegal trade is still of such magnitude that it is too early to judge its effectiveness.
- Some countries are managing and conserving their elephant populations satisfactorily. They should not be penalised because of the problems in other countries.
- There is a need to address elephant management and law enforcement problems in the producer countries.
- There are still approximately 750,000 elephants in Africa. The species is not yet endangered but will become so if the illegal tade continues at present levels.

At this stage, the AERSG believes that positive management for the conservation of elephants in Africa is more likely to succeed than ineffectual international trade bans.

6.2 Rhino Horn Trade

6.2.1 Introduction

Since 1970 the world's rhino population has declined by about 85%. Of those surviving in Africa, the best protected are the southern white rhinos of southern Africa. These have built up over the last 50 years from a nucleus of under 100 to over 4,000 today. In contrast, less than 30 northern white rhinos exist compared with thousands in the 1960s. The black rhino has also been heavily poached in most parts of its formerly extensive range in Africa due to the demand for rhino horn in North Yemen (to make dagger handles) and in eastern Asia (to make traditional medicines).

The black rhino population stood at 65,000 seventeen years ago, but numbers about 4,000 today. Poaching has been particularly severe in Chad, the Central African Republic, all countries in East Africa, Zambia, Mozambique and Angola. Illegal killing of the last major population in the Zambezi Valley of Zimbabwe started in late 1984 with a number of people being killed and wounded in clashes between anti-poaching forces and well-armed commercial poachers from Zambia. These poachers kill only a few elephants in addition to rhinos, since it is solely the high demand for rhino horn that induces them to risk death by intruding into Zimbabwe.

In Asia 1,700 great one-horned rhinos, 500-900 Sumatran rhinos and less than 60 Javan rhinos are all that remain. Since 1982 the main great one-horned rhino population in India's state of Assam has been seriously poached, though this situation has since been bought under control. Sumatran rhinos in Sabah and Indonesia are also being killed in order to supply Asian markets with horn and other rhino products.

6.2.2 Status of the major rhino populations

India: The world's largest population of great one-horned rhinos, about 1,300, survives in India. In 1982 a heavy outbreak of rhino poaching began in Assam due to breakdown of law and order and an influx of automatic weapons from neighouring Nagaland. A minimum of 233 rhinos were illegally killed between 1982 and 1985 in Assam. The horn was exported to Singapore; however, some African horn is sold in parts of western India. Strong anti-poaching measures have now stabilised the situation.

Indonesia: There remain about 400-800 Sumatran rhino. Rhino are poached and horn is exported via Singapore. Resident Chinese have reduced consumption of Sumatran rhino products; in 1986 only 6% of the pharmacies in Djakarta were offering rhino horn for sale as opposed to 27% in 1980. The last of the Javan rhinos are maintained in a national park on the western tip of Java, but this population remains extremely vulnerable and some poaching has occurred in recent years.

Malaysia: An estimated 200 Sumatran rhinos occur, and they are well protected on the Peninsula. The most vulnerable

populations (c. 75-100) are in Sabah where at least 12 have been poached since 1982. Malaysia is a minor consumer of rhino horn and skin. In Kuala Lumpur 10% of the pharmacies sold rhino horn in 1986 and 7% rhino hide, while in Kota Kinabalu the percentages were 11% and 6% respectively, though these figures have now been considerably reduced. A captive breeding programme has been initiated within Peninsular Malaysia.

Nepal: Approximately 375 great one-horned rhinos occur. Over the past ten years there has been very little poaching largely because the rhinos belong to the king who has assigned 500 Royal Nepalese soldiers to guard them. Almost no horn is consumed in Nepal but some skin is used for religious purposes.

Elsewhere in Asia: Scattered populations of Sumatran rhinos still survive in Burma and Thailand, and of Javan rhinos in Cambodia, Laos and Vietnam. However, very little is known of any of these populations.

Kenya: Over 95% of the black rhinos have been lost during the past 17 years; today only about 500 remain. Poaching in the last couple of years, however, has lessened. To protect the remaining rhinos in parks and reserves, the government has initiated the building of fenced-in sanctuaries. The first of these are at Nakuru and Tsavo West, where it is hoped that there will be good management and patrols.

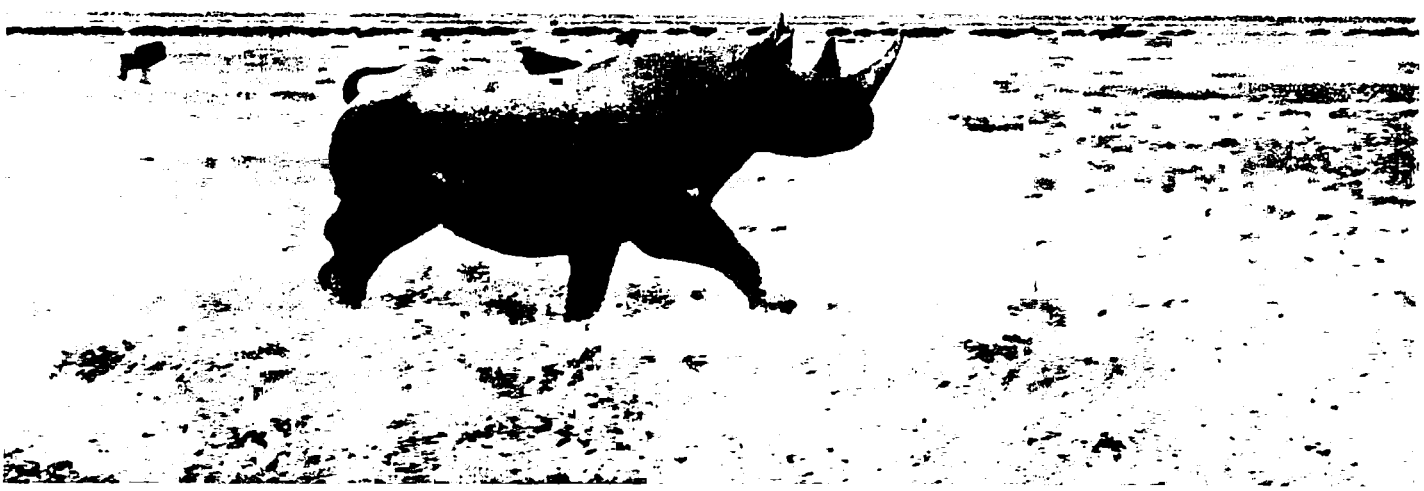
Mozambique: In the early 1970s there must have been several thousand black rhinos in the country but due to heavy poaching, thought to be partly carried out by resistance forces to raise money, the number of rhinos is probably very low today. In recent years large quantities of rhino horn have come out of Mozambique.

Namibia: The 350 black rhinos appear to be relatively safe at present in Etosha National Park, one of the largest populations in Africa. In addition there are about 100 'desert' black rhinos known to have unique behavioural characteristics, in Kaokoland and Damaraland. While in the past these animals have been illegally killed, protective measures are improving now. There are also over 60 white rhinos in the country, the majority of which are well-managed on private land.

South Africa: About 600 black rhinos and 4,000 white rhinos occur. There has been no poaching of these animals recently but horn continued to be exported illegally in 1986 to Macao and probably Taiwan. Domestic legislation has prohibited the internal sales of rhino horn but some is still being used in small quantities.

Tanzania: Rhino populations in the northern part of the country have been reduced by over 90% through poaching during the past ten years. Poaching continues in various areas. The rhino population in the Selous Game Reserve has fallen from about 3,000 in 1980 to less than 200 today. During the past few years poaching in the Selous Game Reserve has intensified with the majority of horn being exported to Burundi.

Zambia: Very heavy illegal killing of black rhinos in their main stronghold, the Luangwa Valley, has reduced their population numbers from several thousand in the mid-1970s to under 100 today. Rhino poaching is out of control in many parts of Zambia.



Black rhinoceros (Photo: Peter Jackson)

Zimbabwe: The largest population of black rhino in Africa consisting of at least 1,700 animals. However, from July 1984 to April 1987, a minimum of 250 rhinos were killed in the Lower Zambezi Valley, and at present there is a major confrontation between the Zimbabwean authorities and Zambian poachers in the Zambezi Valley. In addition, at least ten rhinos were poached in the Gonarezhou National Park in the south-east part of the country in 1986. There are also about 200 white rhinos whose populations are stable. There is no internal consumption of rhino horn in Zimbabwe and the illegal stocks are exported illicitly.

Elsewhere in Africa: Tiny populations of black rhino also survive in Botswana, Cameroon, Central African Republic, Chad, Malawi, Rwanda, Sudan and possibly Angola, Ethiopia and Somalia. Small population of white rhino exist in Botswana, Kenya, Swaziland and Zaire.

6.2.3 Status of the trade in rhino products

The principal reason for the precipitous decline in rhino populations is the sudden growth in the rhino horn trade starting in the 1970s. This expanding trade was due to the increasing purchasing power in the Middle East because of the oil boom and in eastern Asia because of rising imports of consumer goods to many countries.

Since the 1970s the largest importer of rhino horn in the world has been North Yemen which has been importing about half the rhino horn on the world market annually. The horn is carved into the handles of traditionally worn daggers. Rhino horn imports were legally banned in 1982, but horn has continued to be smuggled into the country.

In 1984 North Yemen began to suffer an economic recession due to the fall in the oil price which meant that Yemenis employed in Saudi Arabia and other oil producing countries returned home, thus reducing the country's hard currency income. In order to prevent the further loss of hard currency, the government cut back smuggling by increasing the number of border officials and enforced the law. The rhino horn trade was thus reduced. From 1982 to 1984 about 1,700 kilos of rhino horn were imported each year. Imports fell to less than 1,000 kilos in 1985 and under 500 kilos in 1986. Furthermore, fewer people can now afford daggers with rhino horn handles. Water buffalo horn is being used increasingly as a less expensive substitute. Only one out of twenty dagger handles is made out of rhino horn today.

In December 1986 meetings were held in Sanaa, the capital of North Yemen, with the Minister of Foreign Affairs and the Minister of Economy, Supply and Trade, to discuss ways of enforcing the ban on rhino horn imports further. A six-point action plan was devised which the government agreed to implement fully as soon as possible.

1. The Prime Minister would appeal to the main trader (who has been handling over two-thirds of North Yemen's rhino horn imports over the years) to desist from handling new supplies of rhino horn.
2. The Foreign Minister would talk to a senior official of the United Arab Emirates about controlling the imports of rhino horn into the Emirates, which eventually make their way illicitly into North Yemen.
3. The government would issue a decree prohibiting the export of rhino horn shavings which go to East Asia.
4. The Customs Department would encourage water buffalo horn as a substitute for rhino horn by eliminating import duties.
5. The government would request the Grand Mufti to issue a fatwa (religious edict) stating that it is against the will of God for man to eliminate an animal species.
6. The government would require all the dagger craftsmen to sign an affidavit stating that they would not use rhino horn, in default of which their licences would be withdrawn.

The first three points have been implemented and the Foreign Minister has promised that the final measures would be carried out before the end of 1987. The most effective measure will be the affidavit system.

The remaining rhino horn on the world market goes to eastern Asia, where it is prized in Oriental traditional medicine as a fever-reducing drug. Since 1985 the last major rhino horn importing countries (South Korea, Taiwan, Macao and Singapore) have officially banned the internatonal trade in rhino products.

Brunei, a small independent country with a Chinese population of approximately 55,000, consumes Sumatran rhino horn and skin. The imports of Sumatran rhino products are legal, but their re-export is illegal. Further, the Customs Act was implemented recently by the Sultan, which bans the export of African rhino horn.

China continues to import rhino horn illegally and Hong Kong, Macao, Singapore and Thailand all exported shipments to China in 1985. The horn is mostly used as an ingredient in various traditional medicines manufactured in large factories in China's main cities and exported to eastern Asia. Although China is a member of CITES these medicines containing tiny quantities of rhino horn are legal because the horn, although on the ingredients list, cannot be readily identified. Small quantities of rhino horn are also available in 17% of the medicine shops in Guangzhou, where it sold for U.S.$ 18,772 per kilo. This horn is imported illegally from Hong Kong. In Xian 50% of the medicine shops sold rhino horn at U.S.$ 2,413 per kilo because it is old stock.

Hong Kong is still a major consumer of rhino products although, since 1979, imports and exports have been illegal. In 1986 exports of 'old stocks' were banned. Over the past couple of years horn has been smuggled into Hong Kong from Macao and has been re-exported to China along with some rhino skin.

In the 1970s Japan was also one of the largest importers and consumers of rhino horn. Since 1980, when Japan outlawed its trade, little rhino horn has been imported and old stocks are being used up. In Japan, saiga antelope horn has been successfully

encouraged as a substitute for rhino horn. In 1980, 44% of Tokyo's larger pharmacies sold rhino horn but by early 1986 this had fallen to 17%. In Osaka, a more traditional city, the percentage fell from 90% to 76% during this period.

In 1984 and 1985, Macao, with its population of only 365,000, became one of the major traders of African rhino horn in eastern Asia as other countries began to close up. In December 1985 the Macao government started to outlaw it by refusing to provide rhino horn import licences to traders; and in February 1986 Macao conformed with CITES principles. However, rhino horn continued to be brought in, some from South Africa. Most of the horn is re-exported to China and Hong Kong (illegally), but the remainder finds its way into Macao's Chinese medicine shops, 80% of which offer rhino horn to patients.

Singapore banned international trade in rhino products in October 1986, following pressure from the American government and international criticism. Singapore has not been a large consumer of rhino products (in 1986, 39% of the pharmacies sampled sold rhino horn, 24% rhino nails, and 15% rhino skin). Because it was legal to trade in rhino horn prior to October 1986 it had been a major entrepot for Asian rhino products and indirectly stimulated much of the poaching of Asian rhinos.

South Korea used to be one of the largest importers and consumers of rhino horn in the world. In this country the horn is used primarily in making Chung Sim Hwan balls for treating a variety of ailments. During the past few years there is evidence that rhino horn shavings have been imported into South Korea from North Yemen. Legislation against rhino horn imports was passed in 1985. Water buffalo horn has now been accepted by the doctors as a substitute for rhino horn and is being promoted in the Oriental medicine clinics.

Taiwan was a major importer and consumer of rhino horn from the 1970s until 1985 when the government banned imports. In 1986 there was some evidence that African rhino horn was being smuggled from Hong Kong into the country via Gaoxiong. Taiwanese fishermen are known to exchange electronic goods for rhino horn in the international waters off mainland China. Rhino horn is widely consumed in Taiwan. A survey in December 1985 showed that 76% of Taipei's medicine shops and 90% of those in Gaoxiong offered rhino horn for sale.

Thailand has been a fairly large consumer of a wide variety of rhino products: horn, hide, nails, blood and dung, although the trade is illegal. Recently most of these products have come from Asian, rather than African, rhinos. Bangkok businessmen buy whole, fresh Sumatran rhino carcasses for between U.S.$ 3,800 and U.S.$ 7,600 each, supposedly from Burma, Laos and Thailand. A survey in February 1986 showed that 34% of Bangkok's Chinese pharmacies sold Sumatran rhino horn for U.S.$ 11,629 per kilo. One shop offered six Sumatran rhino penises for sale at an average price of U.S.$ 600 each in 1986. They are purchased by the Chinese for use as aphrodisiacs.

6.2.4 Principal trade routes and entrepots for rhino products

From 1972 to 1979, minimally, an average of 8 tonnes per year of rhino horn went onto the world market. From 1980 to 1984 the amount fell to an average of 3.5 tonnes per year due to the reductions in rhino populations. Most horn originating from African states was exported to North Yemen via Burundi, Djibouti, Sudan or the United Arab Emirates; or it went to eastern Asia via Burundi, Central African Republic, Namibia, Portugal, Tanzania, United Arab Emirates or Zambia.

Burundi is the major entrepot on the African continent for rhino horn. Burundi obtains illicit rhino horn from Zambia, Mozambique, Tanzania and Kenya. The import and export of rhinoceros horn in Burundi is apparently legal and, therefore, contributes to the decimation of a valuable natural resource in many African countries.

In Zambia, since mid-1984, poachers have crossed into Zimbabwe for rhino horn to supply the middlemen in the capital, Lusaka. Most stock goes to Burundi. The poaching continues, partly because the rhino horn is easily moved out of Zambia to the major world markets. It is known how this horn is transported within Zambia and appropriate action should be taken immediately.

From Burundi most of the horn is exported by air to the United Arab Emirates (U.A.E.) where much of it is re-exported to North Yemen. There is no evidence that any of the horn is consumed in the U.A.E. but some is being stockpiled. Some rhino horn comes into Saudi Arabia (some of it to Jeddah) for re-export to North Yemen. Some is used for dagger handles carved by Yemenis in the Jeddah suq.

In addition, some horn from the U.A.E. is transported through Saudi Arabia to the eastern border of North Yemen. The U.A.E. is presently a CITES member. However, the U.A.E. government has announced its intention to withdraw from the Convention in early 1988. Measures should be taken as soon as possible to win the government's support for rhino conservation and to stop imports and exports of rhino products. The U.A.E. is now the largest entrepot for rhino horn going to Asia.

North Yemen itself acts as an entrepot. Eastern Asian peoples and some Yemenis have been purchasing the chippings and dust in large quantities from the carvers (of rhino horn dagger handles) in Sanaa, and have exported it to eastern Asia. Since January 1987, however, the export of these chippings has been illegal.

Also, since 1981 traders in the Sudan have been exporting considerable quantities of rhino horn, mostly by air, to North Yemen. The trade has been illegal at least since the early part of 1983.

In the past, Singapore was the main entrepot for Indian and Sumatran rhino products and for some African rhino hide and horn. On 24 October 1986, however, the Singapore government announced that, with immediate effect, all imports and exports would be stopped.

Although China is a party to CITES, factories continue to export relatively large quantities of manufactured medicines said to contain rhino horn. From a technical point of view this is legal since the rhino horn in the medicines is not readily distinguishable from other ingredients. Nevertheless, China should stop this trade by using substitutes for the rhino horn in

order to end the imports of new stocks of horn. The main consuming countries in eastern Asia could also help by refusing to import medicines whose labels state that rhino products are contained in them.

6.2.5 Progress and improvement in the trade

Over the past five years almost all the major consuming countries of rhino products in Asia have imposed laws to stop imports and exports: Hong Kong prohibited imports in 1979 and curtailed exports of 'old stocks' in 1986. North Yemen passed a law against rhino horn imports in 1982 and outlawed exports of rhino horn shavings in 1987. South Korea's protective legislation came into effect in 1984 and 1985. Taiwan banned the international trade in 1985, the same year as Macao. And Singapore banned international trade in 1986. In most cases these governments have enforced their new laws and the amount of horn going into these countries has decreased sharply.

During this period there have also been major efforts taken to encourage the use of substitutes for rhino horn and skin in Asia. The Japanese government, for example, distributed a circular to pharmacists in the early 1980s asking them to use other traditional drugs instead of rhino horn. Now saiga antelope, cow and water buffalo horn are widely used in place of rhino horn. The Korean Oriental Doctors Association, supported by research carried out at Kyung Hee University, began promoting water buffalo horn as a substitute for rhino horn in 1985. In North Yemen, since 1985, dagger makers who have had difficulties in obtaining supplies of rhino horn have switched to water buffalo horn and today less than one out of twenty dagger handles is being made from rhino horn.

Further, there has been a widespread international media campaign in newspapers, magazines, radio and television deploring the desperate plight of the rhinos and the need to discourage the demand for their products. The fact that fewer customers ask for rhino-based medicines in Asian pharmacies is evidence that the campaign has had effect.

6.2.6 Conclusions and recommendations

The rhino is facing a severe crisis. In 1970 there were about 70,000 individuals of the five species. The black rhinoceros of Africa has been affected the most severely where its numbers have declined from an estimated 65,000 in 1970 to 4,000 today. Today under 11,000 rhinos survive representing an 85% decline due primarily to poaching for the horn.

Nevertheless sufficient demand remains that, if the rhino is to survive in the wild, the remaining problems of international trade must be solved. Further, based on the relative ease by which rhino products move between countries in Africa and Asia which are Parties to CITES (and therefore must have legal prohibitions governing the rhino) implies complicity at the highest levels in public and private sectors. First and foremost is the need to close down the entrepots in Africa.

Because the rhino is facing a crisis, the internal trade in rhino products should be phased out. In order to avoid the problem of financial compensation, the legal possession of rhino products should not be prohibited and countries should establish a time limit in which the existing stocks are to be depleted. In some countries where buying and selling rhino horn is still carried out in medicine shops, new stocks are purchased illicitly and passed on to customers as 'old stocks'. This, of course, encourages poaching. Also the legal presence of rhino products in pharmacies further encourages buyers and stimulates demand.

For the rhinoceros to survive in the world more dedicated manpower and money must be allocated to improve the management of these animals. Each African and Asian country should produce a national strategy plan on how to protect the rhinos within their borders, and follow it. Specifically the following actions are recommended:

1. Bring political, diplomatic and economic pressure on the governments of United Arab Emirates and Zambia to take the necessary steps to prevent their nations from serving as entrepots for illegally obtained rhino horn.

2. Urge the government of the People's Republic of China to prohibit export of traditional medicines which are stated to contain rhino products.

3. Request all CITES Parties to prohibit importation of traditional medicines which are stated to contain rhino products.

4. Request all those nations in which rhino products are traded internationally to implement measures to prohibit the trade. Such prohibitions should establish a time-table in which existing stocks can be depleted.

5. All nations in which rhino products are consumed should actively promote the substitution of alternative animal products such as water buffalo or saiga antelope horn, for rhino horn in products imported, exported or consumed internally.

6. Continue to improve the management procedures for the remaining rhino populations in Africa and Asia, including: expanding captive breeding programmes; increased guard patrols; use of electrified fences where necessary and feasible; increased investigative police activites; and increased penalties for violation of existing laws.

7. Continue efforts at alerting world public opinion to the severe threat of extinction faced by the world's rhinoceros species resulting from the illegal trade in their products.

Chapter 7: A Review of Action Priorities Established for Elephant and Rhino in 1981

Organisations funding conservation projects need a clearly defined minimum set of priority projects in rank order which are part of a clearly stated programme (Cumming, 1984). They need to be convinced that the programme and projects can be implemented and that they represent the best use of available funds.

The 1981 joint meeting of the then separate IUCN/SSC African Elephant and African Rhino Specialist Groups held at Hwange set out to accomplish this and provided a minimum set of continental action priorities for elephant and rhino conservation. These priorities, which became those of the newly formed AERSG in 1982, also gave emphasis to appropriate ecosystem protection and management, and to effective administrative devices to execute the action plan (Jackson, 1982; Cumming and Jackson, 1984).

This brief review summarises the action plan established at Hwange and evaluates subsequent progress in meeting the identified priorities. There is no attempt to claim credit on behalf of, or to discredit, AERSG, funding organisations, governments, conservation groups or individuals. AERSG, in its technical and scientific advisory capacity, strives to provide an objective set of guidelines for action to conserve Africa's elephants and rhinos. Governments, NGOs and funding organisations are in no way obliged to adhere to such guidelines, and indeed may have their own respective sets of priorities. However, the AERSG action plan probably provided the best available minimum set of priorities and guidelines for the two species at the time.

7.1 Action Priorities 1981

Priorities were examined within three major categories of equal importance: (1) political and government action; (2) action on trade; and (3) field action. Priorities were determined in terms of particular species or subspecies, the ecosystems they inhabit, and the cost-effectiveness and chances of changing a low conservation status to a higher conservation status (Jackson, 1982). Emphasis was also placed on maintaining a high conservation status of key species. The agreed priority ranking for species and regional populations was:

1. Northern white rhinos
2. Black rhinos
3. Southern white rhinos
4. Kaokoland desert elephants in Namibia
5. West African forest elephants
6. West African savanna elephants
7. Central and East African elephants.

The priorities for action under each of the main categories (political action, trade and field action) are listed in Table 7.1. Further details of each priority are given in Jackson (1982) and Cumming and Jackson (1984).

During the six years between the Hwange and Nyeri meetings action which could be rated as successful was taken on only five of the 34 priorities listed in the action plan. Partially successful or limited action was taken in respect of a further 14 of the priorities, action on at least two of the remaining priorities showed no significant success, and no action seems to have been taken on 11 of the priorities (Table 7.1).

There are some fundamental problems in evaluating conservation action in relation to priorities such as those established at Hwange. The more important are:

- the action and inputs required and indicators of success were often not clearly specified at the time so that clear criteria on which to base an evaluation of success or failure are often not available;
- particular priorities were seldom directed to any particular individual or organisation for action which makes it difficult to establish why no action was taken;
- there is a tendency to regard "Action" as that being taken by NGOs and in some instances action may well have been taken by the appropriate authorities in the countries concerned without AERSG members being aware of it.

Despite these qualifications it is nevertheless clear that very little successful action was taken in response to the AERSG priorities and in many instances the action that was taken was too little and too late.

Northern white rhino (Photo: Ministry of Information - Uganda/WWF)

Table 7.1 An assessment of progress on conservation action priorities established by AERSG since 1981

	Conservation Action	Action taken 1	2	3	4	Remarks
Political and Government Action						
1.	Desert elephants and rhinos, Namibia	X				Immediate action taken
2.	Parc "W" elephants, West Africa				X	
3.	Gourma Desert elephants, Mali				X	
4.	Trade		X			
5.	African Convention on Conservation				X	
6.	Regional co-operation, anti-poaching		X			Chad, CAR, Sudan: poaching unabated
Action on Trade						
1.	Rhino horn, govts. of consumer nations		X			
2.	Rhino horn, traders in consumer nations		X			
3.	Monitoring of ivory trade		X			
4.	Licensing legal dealers				X	Agreed at CITES meeting, 1987
5.	Implementation of CITES resolutions		X			Ivory quota system, 1986
Field Action: Northern White Rhino						
1.	Strengthen present captive herd		X			
2.	Add animals from wild to captive herd				X	
3.	Protect rhinos in Garamba N.P.	X				
4.	Protect rhinos in Sudan				X	
Field Action: Southern White Rhino						
5.	Translocate surplus animals	X				
Field Action: Black Rhino						
6.	Taxonomic study	X				Ongoing studies
7.	Cameroon population				X	
8.	Central African Republic				X	EEC project too late for rhinos
9.	Kenya		X			
10.	Tanzania - Selous Game Reserve			X		
11.	Zambia - Luangwa Valley			X		
12.	Southern Africa - translocations	X				In Zimbabwe, S. Africa and Namibia
Field Action: Elephant - West Africa						
13.	Ivory Coast		X			Surveys
14.	Liberia		X			Surveys
15.	Sierra Leone		?	?		
16.	Ghana				X	
17.	Senegal				X	
18.	Benin, Niger, Burkina Faso - Park "W"		X			Surveys
Field Action: Elephant - Central, East Africa						
19.	Central African Republic		X			Projects implemented belatedly
20.	Cameroon				?	
21.	Zaire - Garamba and Virunga NP's		X			Garamba rehabilitation project
22.	Gabon - surveys		X			Forest elephant survey
23.	Tanzania - Selous Game Reserve				X	Survey in 1986
Totals		5	14	2	11	

Columns assessing "action taken" are: 1 = Successful action taken; 2 = Partially successful or limited action taken; 3 = Unsuccessful action taken; 4 = No action taken.

Chapter 8: Action Plan for African Elephant and Rhino Conservation

The primary objective of the Nyeri meeting of the AERSG was to review critically the status and trends of elephant and rhino populations in Africa as a basis for generating a minimum set of priority actions for the conservation of these species. The numbers, trends and status of rhino populations are reviewed in Chapter 2, while Chapter 3 provides a priority ranking for black rhino populations. The numbers and trends of elephants in Africa are examined in Chapter 4 and the links between the ivory trade, the ivory quota system and population trends are reported on in Chapter 6, as is a review of the rhino horn trade. A major innovation in AERSG's approach to elephant conservation was a first attempt to generate regional conservation strategies for elephants. These are presented in Chapter 4. This information base, together with information on the resources available for conservation in Africa (Chapter 5), and a review of previous action plan priorities (Chapter 7) were brought to bear on the task of drawing up a minimum set of priority conservation actions for the rhinos and elephants in Africa.

The format of previous AERSG Action Plans was followed and priorities were examined at four distinct operational levels for rhinos and elephants.

1. Political action
2. Trade
3. Field action
4. Resource management (elephants only)

The order of conservation priority for species and for regional populations of elephants was considered to be:

1. Black rhinos
2. Northern white rhinos
3. Desert elephants
4. Southern white rhinos
5. West African elephants
6. Forest elephants
7. Savanna elephants

8.1 Political Action

8.1.1 **The United Arab Emirates** is now the major entrepot state for ivory and rhino horn and has recently withdrawn from CITES. International diplomatic pressure on the UAE to control trade in ivory and rhino horn is urgently required.

8.1.2 **Corruption within countries in Africa** is a common underlying factor associated with rhino and elephant poaching and the continuing illegal trade in ivory and rhino horn. Much good work being carried out by government departments responsible for conservation has been undermined by such activities. Poached ivory is entering the international market with legal documents issued by corrupt officials. Governments and heads of state need to be made aware of the problem, be provided with specific information on illegal activities and be given assistance to bring the illegal trade under control.

8.1.3 **Key individuals** involved in the illegal trade in ivory should be identified through the involvement of professional investigators and this information should be supplied to governments to enable them to take the necessary action to halt such sabotage of their economies.

8.1.4 **IUCN and other appropriate organisations** should place the issues of elephant and rhino conservation, and illegal trade in their products, within the forum of the Organisation for African Unity, so as to inform OAU member governments about these problems and the need for improved conservation measures.

8.2 Trade

8.2.1 Rhino horn trade

8.2.1.1 *The Lusaka connection/conduit* should be closed. Poaching pressure on the Zambesi Valley population of black rhinos in Zimbabwe is coming from neighbouring Zambia. Action to close this conduit is urgently required. Similar considerations apply to Burundi.

8.2.1.2 *Internal trade in China, Taiwan and other Asian countries* should be stopped. The manufacture and trade in traditional medicines containing rhino products is still permitted in several Asian countries, and there is a need to seek the co-operation of these countries in closing down this aspect of the rhino horn trade. Although strictly speaking outside the purview of CITES, the matter was the subject of a resolution of the Conference of the Parties in Ottawa in July 1987 (see Appendix 4).

8.2.1.3 Initiatives to encourage the *use of substitutes to rhino horn* in consumer countries should continue.

8.2.1.4 *North Yemen*. The entry of rhino horn into North Yemen has been reduced but not eliminated, despite official bans on its import. Earlier partially successful initiatives to close this trade should be pursued.

8.2.2 Ivory

8.2.2.1 *The illegal trade within Africa* should be investigated. There is little concrete information on the illegal trade in ivory within Africa, and a comprehensive undercover investigation of the form and extent of this trade is required if effective controls are to be introduced.

8.2.2.2 *The consumption of raw ivory within Africa* should be investigated. While reasonably good data are available on the amount of raw ivory leaving Africa, only fragmentary data are available on the levels of production and use of ivory within the continent. Without this information it is not possible to establish the full extent to which elephants are being harvested.

8.2.2.3. *Analysis and assessment of the ivory quota system.* The quota system was introduced in 1986 at the request of the African states which effectively constitute the producer countries for ivory in Africa. The system has been criticised by some conservationists and those involved in the legal trade in ivory. There is a continuing need to analyse the statistics on ivory quotas, trade in ivory, and trends in elephant populations in Africa. The evidence available to the AERSG at the Nyeri meeting made it clear that the present annual continental harvest of elephant is not sustainable.

8.3 Field Action

8.3.1 Black rhinos

8.3.1.1 *The Continental Conservation Strategy* for black rhinos being prepared by AERSG should be completed and published by IUCN.

8.3.1.2 *Field action priorities for the conservation of wild populations of black rhinos.* Some 37 populations of black rhinos have been examined and scored for biological importance, the likelihood of external assistance being successful, and the urgency with which such assistance is needed (see Chapter 3). The priority areas and the field actions and support required in each are listed below. Apparent discrepancies between the list below and the priorities set in Chapter 3 are the result of additional considerations which were not not catered for in the initial scoring system.

a. *Zambezi Valley, Zimbabwe.* This area lies downstream of Lake Kariba and includes a number of components of the Zimbabwean Parks and Wildlife estate, which covers an area of nearly 12,000 sq km. The Mana Pools National Park and the Chewore and Sapi Safari Areas comprise a World Heritage Site within the complex. The Zambezi Valley carries the largest remaining coherent population of black rhinos left in Africa and the only single population of more than 500. The population is under threat from Zambian-based poachers who have accounted for a minimum of 300 rhinos over the last three years. Requirements are for a helicopter to assist in the rapid deployment of anti-poaching forces, a light aircraft for surveillance, and an effective research and monitoring programme to estimate accurately the size of the population and to develop monitoring techniques both to assess rhino population trends and the effectiveness of anti-poaching strategies and tactics.

b. *Kaokoland/Damaraland (Kaokoveld), Namibia.* A population of approximately 90 black rhinos lives in desert or near-desert conditions outside protected areas in Kaokoland and Damaraland. There is a need for additional support for patrols and possibly the recruitment of additional auxillaries who, drawn from the local communities, could assist the authorities in patrolling the area. Additionally, there is a need to maintain the existing monitoring programme (which depends on the regular identification of individual rhinos), and to support public relations and extension work amongst the pastoral communities living in the region.

c. *Cameroon/Chad.* These small populations lie on the western extremity of rhino distribution in Africa, and represent the only remaining black rhinos in the region. There is no recent information on the size and status of the small population which resides in the Bouba-Njida National Park and a thorough reconnaisance survey is required of the park and of the area from which sightings have been reported recently in Chad.

d. *Tsavo National Park, Kenya.* The population has declined over the last two decades from several thousand to less than 200. There is a need to enlarge the fenced and protected sanctuary created within the park to hold black rhinos. Anti-poaching activities require support and a survey should be carried out to determine the numbers and distribution of rhinos remaining in the park.

e. *Selous Game Reserve, Tanzania.* The Selous Game Reserve of 55,000 sq km has the potential to hold some 18,000 or more black rhinos. Numbers in the reserve have declined from more than 3,000 in 1980 to less than 300 in 1987. There is a need to review the management of the reserve, establish effective anti-poaching operations and conduct intensive ground surveys and censuses in appropriate areas. The staff of the Selous Game Reserve are urged to collect data on rhino sightings and signs in a systematic way to facilitate these exercises.

f. *Gonarezhou National Park, Zimbabwe.* Rhinos were re-introduced into this 5,000 km^2 park in 1971. The 72 animals introduced increased to over 150, but poaching over the last three years has reduced this to less than 50 rhinos. Anti-poaching efforts are complicated by the Mozambique civil war and the movement of refugees through the park. Staffing levels should be improved and some equipment, particularly vehicles, is needed to support anti-poaching operations.

g. *Luangwa Valley, Zambia.* The rhino population of the Luangwa Valley has declined from several thousand to less than 100 within this decade. Support is required for the Zambian Government proposal to establish a protected sanctuary within the Luangwa South National Park. There is also a requirement to strengthen anti-poaching efforts and to involve local communities further in conservation efforts.

h. *Sebungwe region, Zimbabwe.* The Sebungwe region of some 15,000 sq km lies to the south of Lake Kariba and comprises a complex of protected areas and communal farming land. The Parks and Wildlife areas are the Chizarira National Park and contiguous Chirisa Safari Area, the Chete Safari Area and the Matusadona National Park. The rhino population of at least 500 is dispersed between the four protected areas with some animals still living on communal farm land. Major requirements are for extension and public relations work to involve local communities in the conservation of rhinos in the region, for the establishment of a highly mobile and efficient anti-poaching unit to pre-empt any poaching threat, and to census accurately and monitor the population.

i. *Laikipia Ranch, Kenya.* This private ranch of 400 sq km contains a rhino population of 47, within an unfenced area of about 190 sq km. A private anti-poaching force of 35-40 men, funded in part by WWF, patrols the ranch and poaching has been negligible over the past six years. Rewarding research on rhino social behaviour and reproductive patterns is being undertaken on the ranch. The anti-poaching work, monitoring and research should receive continued support.

j. *Aberdare National Park, Kenya.* The rhino population is estimated to be about 60 but no systematic survey has been undertaken over the complete area. A survey is therefore necessary, and requirements for increasing protection for the rhinos must be identified and acted upon. If the intensively-managed rhino sanctuaries in Kenya are successful in breeding rhinos, Aberdare National Park may be important as a release area to absorb and allow continued rapid breeding of rhinos from these sanctuaries.

The above constitute the 10 areas of highest priority for black rhino conservation action. The next five areas on the priority list, in order of importance, are listed below. For all of these, situation reports are required to specify population sizes and conservation needs.

k. *Mount Kenya National Park, Kenya* (Est. 40 rhinos)

l. *Rubondo National Park, Tanzania* (20-30 rhinos)

m. *Ngorongoro Conservation Area, Tanzania* (20 - 30 rhinos)

n. *Akagera National Park, Rwanda* (Est. 15 rhinos)

o. *Kasungu National Park, Malawi* (Est. 20 rhinos)

Black rhinos (Photo: Peter Jackson)

Regional Elephant Conservation Strategies, i.e. for West, Central, East and Southern Africa, should be developed as soon as possible. These strategies should identify priority "baseline" populations for the long-term conservation of the species and their habitats within each region, and generate strategies for the effective conservation and management of elephant populations living outside protected areas. These strategies will define the priorities for conservation action for elephants within each region (and would include both forest and savanna elephants). Initial attempts to define baseline populations have been made in Chapter 4.

8.4. Resource Management

The conservation and management of elephant populations in Africa should be promoted by providing information and advice on:

8.4.1 Monitoring elephant populations

8.4.2 Management and harvesting

8.4.4 Law enforcement

8.4.5 Ivory trade

The main focus of conservation action for elephants in Africa has been on anti-poaching and on attempts to halt the ivory trade. While these may be the most appropriate actions in some cases, there are many circumstances in which positive management of elephants, as a valuable aesthetic and economic resource, may be more successful. In particular, there is a need to explore the protection of elephants through greater community involvement in their conservation. This may involve both benign and consumptive uses of elephants, changes in legislation, administration, marketing of products (whether tourism or ivory) and reducing conflicts between elephants and farmers. Improved resource management and law enforcement capabilities will be a vital component in implementing regional conservation strategies for elephants. A key element will be finding ways in which agencies responsible for protected areas can fully finance their operations.