AFRICAN RHINOS: CURRENT NUMBERS AND DISTRIBUTION

C.G. Gakahu
Wildlife Conservation International
Nairobi, Kenya

Despite the concern expressed and the measures taken by conservationists and wildlife authorities, the status of African rhinos has worsened during the last decade (Fig. 1). The black rhino, *Diceros bicornis*, has continued to rapidly decline in number, resulting in further fragmentation and extinction of populations. Today most countries have fewer black rhinos than they had three years ago; the deaths represent a great loss of unique genes and adaptation to local environment. However, Kenya, Namibia, South Africa and Zimbabwe have stable populations and although on the decline in Botswana and towards extinction in Mozambique, the southern white rhino *Ceratotherium simum simum* has continued to show an overall increase. The northern white rhino *Ceratotherium simum cottoni* is now extinct in Sudan and Uganda but its 1984 population of 20 individuals in Garamba, Zaire, has gone up to 26. *(But, see Smith and Smith, this volume - ed.)*

Numbers, distribution and the trend of population, are vital data for conservation of rhinos. Hillman (1981) provided the first scientifically-based continental estimates for African rhinos. These figures were updated by Western and Vigne i, who estimated 8-9,000 black, 3,920 southern white and 20 northern white rhinos (Western & Vigne 1985). Another survey conducted in 1987 estimated 3,800 black rhinos, 4567-4635 southern white and 22 northern white (Cumming, *et al.*, 1989). The survey reported here looks at the fate and performance of African rhinos in the last six years. The survey was conducted by the African Elephant and Rhino Specialist Group (AERSG) of IUCN with funding from Wildlife Conservation International.

SURVEYS

Questionnaires were sent out to 30 individuals in rhino range states. The questionnaire requested information on numbers, distribution range, density, recent population trends, and aspects of rhino horn trade. Other information concerned overall management needs and problems. Population estimates data were ranked using the following categories:- A. aerial or ground census; B. non-scientific reconnaissance survey; C. informed guess. Levels of reliability of data as percentages of all the returned questionnaires for the three species are as follows:-

Species	A	B	C
Black	55	20	35
Southern White	68	16	16
Northern White	100	-	-

Category A estimates for black rhinos were all from southern Africa and Kenya in eastern Africa. The northern white rhino is extinct except for the single Garamba population in Zaire, hence the 100% score in category A.

RHINO NUMBERS

The national estimates and trends of black and white rhinos in Africa since 1980 are summarized in the Table. Black rhino numbers have dropped from 8,800 in 1984 to 3,390 in 1990, a 61% decline in 6 years or 20% per year. In some countries like Sudan, Uganda, Mozambique and Somalia the species has become extinct. These local extinctions had been

predicted in surveys conducted within the last ten years (Hillman,1981 1983; Borner, 1981; Western, 1982; Western & Vigne, 1984; Western, 1887; Martin, 1989).

Another significant feature is the change in the location of the large populations. In 1984 Tanzania had the largest number of animals and accounted for 35.5% of the continental total; this has dropped to only 5.5%. Similarly Zambia's 18% in 1984 has become 1.2% today. A contrary change has occurred in southern Africa. South Africa and Zimbabwe accounted for 19% and 7.3% in 1984 while today their respective figures are 50.1% and 18.5%. This positive shift is not due to increased numbers but because of decline in most of the other African countries.

Regionally, in 1984, southern Africa represented 52%, eastern Africa 44% and west-central 3% of the continental total. These proportions have shifted to 82%, 17% and 1% respectively.

Finally, it is worth noting that 90% of all remaining black rhinos are to be found in Zimbabwe, S. Africa, Namibia and Kenya. Alongside the drastic decline in numbers the species range has contracted considerably. This has isolated small populations in the once expansive and ecologically diverse black rhino range in Africa. However, it is worth noting that the overall continental rate of decline has dropped in the last three years as shown by the flexing of the curve in Fig. 2.

The increase in southern white rhino reported by Western and Vigne in 1985 has been maintained in South Africa, Namibia and Kenya. The species population in Zimbabwe remained stable but declines were recorded in Swaziland and Botswana. South Africa, Zimbabwe and Namibia have 97% of the continental total. The introduced Kenyan population in sanctuaries has grown at the rate of 16% per annum from 25 to 65 individuals over the last 10 years. Southern white rhino total population in Africa now stands at 4,745 compared to 3,841 in 1980, an increase of 2.35% per annum. The northern white rhino has decreased by over 97% in the last decade although the Garamba population, which had dropped to 20 individuals by 1984, now stands at 26. *(But, see Smith and Smith, this volume - ed.)*

TRENDS IN POPULATION SIZES

The size distribution of existing black rhino populations reveals a larger proportion of increasingly smaller populations than the 1984 survey.

No population has more than 400 individuals. In 1980, 75% of the continental populations had less than 100 individuals: this has gone up to 80% today. Figure 3. shows percentage cumulative frequencies of populations of various sizes in 1980 and in 1990.

The two curves are significantly different (Kolmogorov-Smirnov 2-sample test: D=0.666, P=0.001, N=24), with the shift left due to an increase in the proportion of small size populations. The percentage frequencies of the number of black rhinos within various population sizes in 1980 and 1990 are shown in Fig. 4. The difference between the two curves is also significant when subjected to the same test (D=0.666, P=0.001, N=24). Figure 4 shows that the 15% of all rhinos living in populations of 100 individuals or less in 1980 has increased to 30% today. Similar figures for populations of 400 individuals are 32% and 80%, respectively. A significant factor that has contributed to the shift of both is the extinction of some populations which had under 10 individuals in 1980. Generally the survey reveals that the alarming decline of rhinos continues over most of the species range, although at a lower rate. The exceptions are southern Africa and Kenya where rhino populations are stable or increasing, which is a reflection of the commitment and efficiency of wildlife authorities and especially, the development and implementation of rhino management plans.

In countries which have experienced major civil unrest in the last decade rhino numbers are negligible; to all intents and purposes the rhino is extinct. The ready availability of

automatic weapons, allocation of nearly all resources to war and the fact that poaching becomes a means of survival for people in remote areas during civil disturbance, are the main reasons for the demise of rhinos in these countries.

The cause of continuing pressure on rhinos is the intolerable trade in their horn which is used mainly for making traditional medicines in the Far East (Martin, 1989; Martin, 1991; Vigne and Martin, 1989; Song and Milliken, 1989). Market forces have caused prices to rise to a level which encourages poachers to take great risks. What needs to be done has been repeated time and again: reinforce anti-poaching measures; improve regional co-operation of management and law enforcement authorities; find acceptable substitutes for rhino horn as medicine; enforce CITES regulations.

Half of all the world's black rhinos are in Zimbabwe and three other countries have more than 80% of the rest. South Africa holds nine of every ten white rhinos. Even to a layman the "all eggs in one basket" risk is obvious. For the conservationist questions of genetic depression, biased sex ratios and age structures and active management are the obvious challenges. Conservationists most often operate in areas of peace but the risk of future civil unrest in the countries with nearly all rhinos cannot be ruled out.

Personally, I see a future challenge: endeavour to influence socio-political and economic systems so as to prevent those civil wars whose impact on rhinos and other wildlife is only too evident.

Nearly all rhinos are in parks or on private lands. Those outside protected areas and some in the larger parks are either scattered individuals or live in very small populations. Such conditions expose the animals to biological and environmental problems that accelerate their extinction and, because of limited resources, their protection is beyond the capability of wildlife authorities. Sanctuaries are often the rhinos' only chance of survival but require much forethought and careful planning.

The capture and translocation of solitary rhinos to small safe sanctuaries has proved the best strategy (Brett, 1990; Gakahu, 1989). The success of the Kenyan experiment is evidence that normal population growth can be realized together with improved security from poaching. However, sanctuaries do pose management challenges in the establishment, development and operational stages.

Adopting sanctuaries without overall long-term management plans should be avoided. Plans and their development assist in evaluating costs, prospects and available alternatives and are likely to gain the attention of international donor agencies.

A preliminary survey for the establishment of a sanctuary should cover the geographic location and history of the area in terms of past rhino numbers, the available food vegetation, security, the communication infrastructure (which is essential during translocation and future protection), and natural factors like predators and disease. Evaluation of other forms of land use and investigation of the lifestyles of surrounding human communities to establish potential support or hostility toward the sanctuary are also essential. Finally, there is a need to assess the indirect benefits towards other wildlife species and habitats within the proposed sanctuary and neighbouring conservation areas.

Currently, information, knowledge and skills on rhino sanctuaries and other aspects of rhino conservation and management are almost totally confined to Kenya, South Africa and Zimbabwe. There is a need for more continental cooperation and exchange of knowledge and skills. AERSG has encouraged such interchange and will continue to do so in the future.

The survey reported here also requested information on problems and needs of rhino conservation. It would appear most difficulties are linked to poaching, inadequate communications, and un-coordinated management plans and strategies. The needs for

repeated surveys, continuous monitoring and improved anti-poaching surveillance featured prominently.

Lack of technical personnel and equipment including aircraft, vehicles and field gear are common to all rhino areas.

In summary, and as urged in the past, range states with rhinos should develop specific management plans both nationally and for conservation areas. Intensive anti-poaching surveillance together with active management and protection are essential. And, most importantly, if the African rhinos are to recover, there must be total elimination of trade in rhino horn products.

REFERENCES

D. Western and L. Vigne, 1985. The Deteriorating Status of African Rhinos. Oryx, No 19, pp 215-220.

D.H.M. Cumming, R.F. DuToit and S.N. Stuart, 1989. African Elephant and Rhinos: Status Survey and Conservation Action Plan. IUCN/SSC AERSG, pp 11-32.

K. Hillman, 1980. Rhinos in Africa Now. Swara, No3, pp 22-24.

K. Hillman, 1981. The status of rhino in Africa and action programme, Africa Rhino Group Report. IUCN/WWF/NYZS.

K. Hillman, 1983. The Status of White Rhinos. AERSG Newsletter, No 1, pp 5-7.

M. Borner, 1981. Black Rhino Disaster in Tanzania. Oryx, No 16, pp 59-66.

D. Western, 1982. Patterns of Depletion in a Kenya Rhino Population and the Conservation Implications. Biol. Cons., No 24, pp 147-156.

D. Western and L. Vigne, 1984. The Status of Rhino in Africa. Pachyderm, No 4 , pp 5-6.

D. Western, 1987. Africa's Elephants and Rhinos: Flagships in Crisis. Tree, Vol 2, No 11, pp 343-346.

E.B. Martin, 1989. Report on the Trade in Rhino Products in Eastern Asia and India, Pachyderm. No 11, pp 13-20.

E.B. Martin and T.C.I. Ryan, 1990. How Much Rhino Horn has come onto International Markets since 1970? Pachyderm, No 13, pp 20-26.

E.B. Martin, 1991. Rhino Horn in China: A Problem for Conservation and the World of Art. Wildlife Conservation, Vol 94, No 13, pp 24-25.

D. Western, 1989. The Undetected Trade in Rhino Horn. Pachyderm, No 11, pp 24-26.

L. Vigne and E.B. Martin, 1989. Taiwan: The Greatest Threat to the Survival of Africa's Rhinos. Pachyderm, No 11, pp 23-25.

C. Song and T. Milliken, 1990. The Rhino Horn Trade in South Korea: Still Cause for Concern. Pachyderm, No 13 pp 5-11.

R.A. Brett, 1990. The Black Rhino Sanctuaries of Kenya. Pachyderm, No 13, pp 31-34.

C.G. Gakahu, 1989. Sanctuaries Offer a Future for Black Rhinos in Kenya. Pachyderm, No 11, p 32.

Table. Present and Past Estimates of Black and White Rhino Populations in Africa

Country	Black Rhino				% of 1990 Total Pop.	White Rhino			% of 1990 Total Pop.
	1980	1984	1987	1990		1980	1984	1990	
Angola	300	90			0.0				0.0
Botswana	30	10	10	2	0.1	70	200	15	0.3
Cameroon	110	110	25	15	0.4				0.0
CAR	3,000	170	10		0.0	20	1	0	0.0
Chad	25	5	5	2	0.1				0.0
Ethiopia	20	10		6	0.2				0.0
Kenya	1,500	550	520	400	11.8	25	30	65	1.4
Malawi	40	20	25	5	0.1				0.0
Mozambique	250	130			0.0	30	20		0.0
Namibia	300	400	470	400	11.8	150	70	200	4.2
Rwanda	30	15	15	9	0.3				0.0
Somalia	300	90			0.0				0.0
South Africa	630	640	580	626	18.5	2,500	3,330	4,225	89.0
Sudan	300	100	3		0.0	400	10		0.0
Swaziland				2	0.1	60	60	8	0.2
Tanzania	3,795	3,130	270	185	5.5				0.0
Uganda	5			0	0.0	1	1	0	0.0
Zaire				0	0.0	400	15	26	0.5
Zambia	2,750	1,650	110	40	1.2	5	10	6	0.1
Zimbabwe	1,400	1,680	1,760	1,700	50.1	180	200	200	4.2
Totals	14,785	8,800	3,803	3,392		3,841	3,947	4,745	

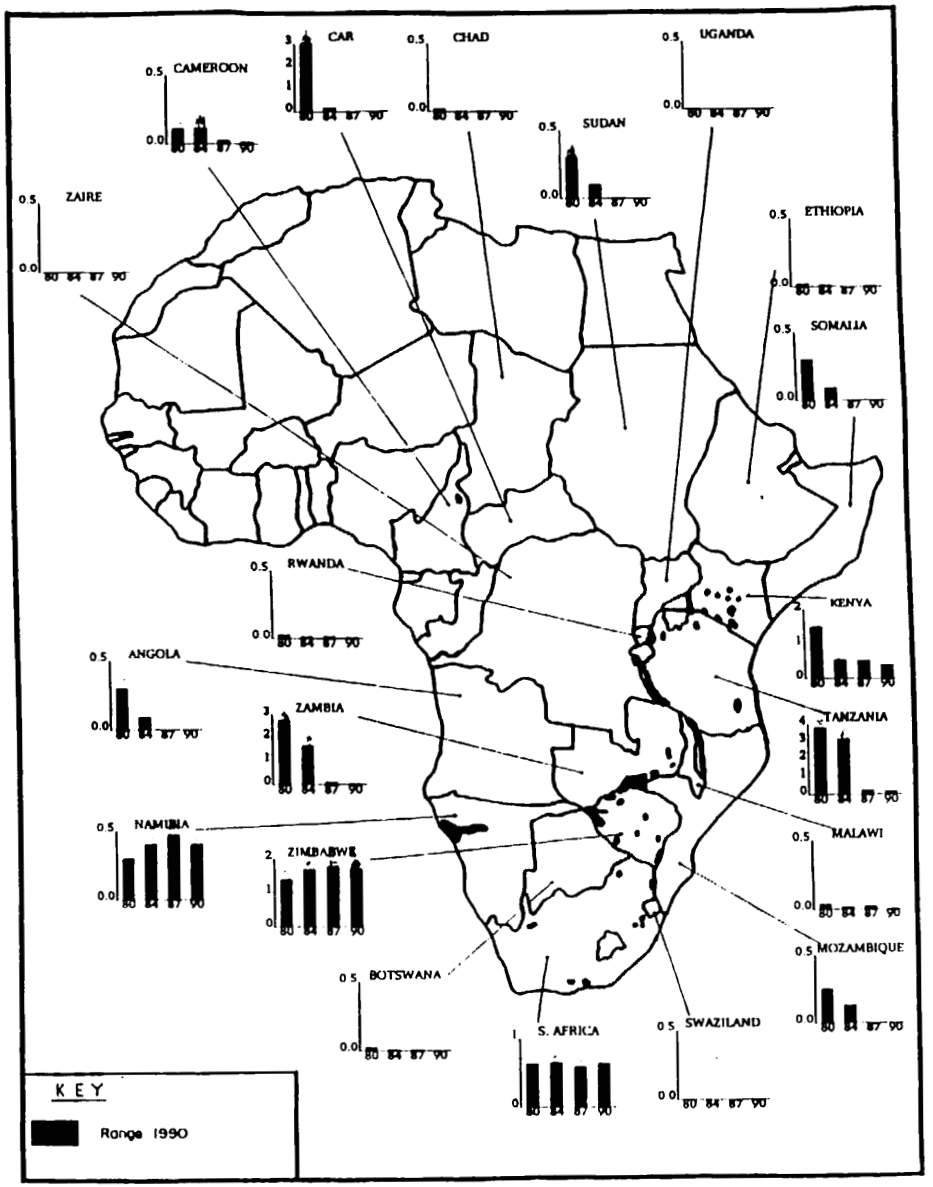

Figure 1. *Black Rhino range and trends in 1990. Each graph covers 1980 - 1990; vertical axis in thousands*

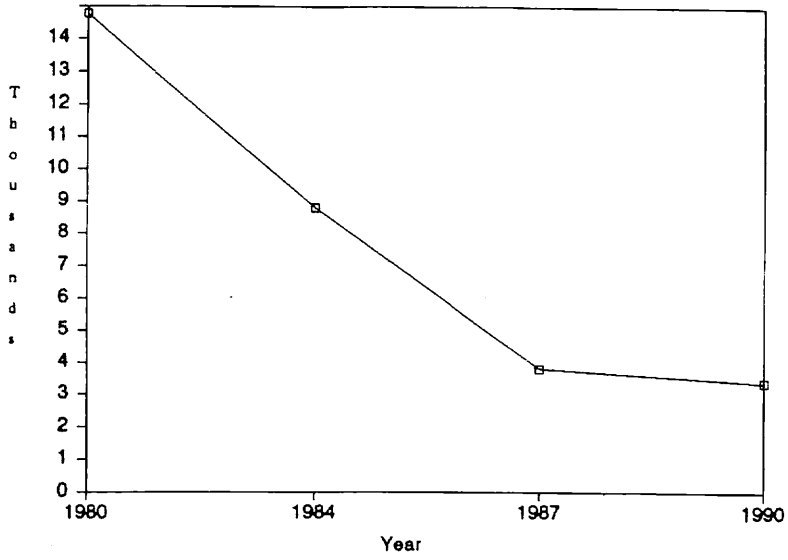

Figure 2. *Estimates of Black Rhinos in Africa between 1980 and 1990*

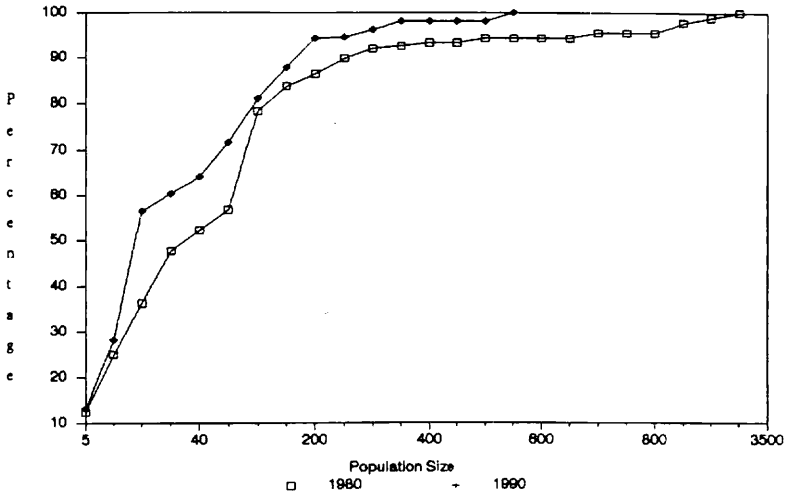

Figure 3. *Cummulative frequency curves of Black Rhino populations showing the change between 1980 and 1990*

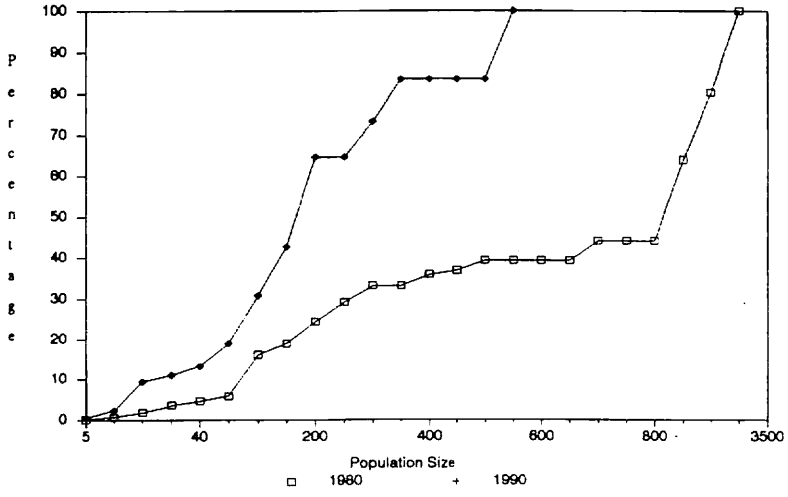

Figure 4. *Cummulative frequency curves of Black Rhino numbers in populations of various sizes, showing the change between 1980 and 1990*