

along the northern boundary. On 15 October 1964, 16 individuals were counted, on Lot 16 Oriibi Flats, bordering the reserve.

Tragelaphus scriptus

Bushbuck

A fairly common resident and well distributed in the reserve. No specimens have been collected. Remains of bushbuck believed to have been killed by leopard have been recorded. A crowned eagle was seen to catch and kill a bushbuck on 25 May 1970.

Cephalophus monticola

Blue duiker

A common resident in the area. No specimens have been collected. Two males captured in Highflats and one captured at Hells Gates were released in the reserve during 1980. Blue duiker remains were found under a crowned eagle's nest in the reserve on 14 December 1964.

Sylvicapra grimmia

Grey duiker

A comparatively rare antelope in the area, and seen more commonly on farmland outside the reserve. No specimens have been collected. Two (one pregnant) females from the Port Shepstone area were released on 24 August 1969 and 22 October 1975. Another pregnant female from the Murchison Mission Hospital was released on 22 October 1975.

CONCLUSION

6 fish, 14 amphibian, 9 lizard, 12 snake and 40 mammal species have been recorded in the Oriibi Gorge Nature Reserve. There is the possibility of another 5 fish, 12 amphibian, 7 lizard, 15 snake and 15-18 mammal species still being recorded. No alien species are established in the reserve.

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TRANSLOCATION OF BLACK RHINOCEROS (*Diceros bicornis minor*) FROM THE NATAL GAME RESERVES 1962-1983

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INTRODUCTION

The black rhinoceros has been classified as an endangered species in South Africa (Skinner *et al.*, 1977) and threatened with extinction elsewhere in Africa (IUCN/SSC African Rhino Group, 1981). The last remaining populations of *Diceros bicornis minor* in the Republic of South Africa in 1961 were found in the Hluhluwe Game Reserve and in Mkuzi Game Reserve (Hitchins, 1976). The reason for the decline of this formerly widespread species from the time of early human settlement at the Cape has been attributed to excessive hunting and land demands by man (Hitchins, 1975).

In 1962, as part of the Natal Parks, Game and Fish Preservation Board's species survival policy, the first black rhino was moved from the Corridor linking Hluhluwe and Umfolozi Game Reserves to Ndumu Game Reserve. Such translocations of black rhino within their former range continued steadily over the years and five 'new' populations had been created by the end of 1983.

MATERIALS AND METHODS

The capture and translocation techniques used for black rhino in Natal have been adequately described by Keep *et al.* (1969), Hitchins *et al.* (1972) and Keep (1973).

RESULTS

Black rhino were translocated to seven conservation areas, namely Ndumu Game Reserve, Umfolozi Game Reserve, Kruger National Park, Itala Nature Reserve, Addo Elephant National Park and Weenen Nature Reserve in the Republic of South Africa, and to Pilanesberg Game Reserve in Bophuthatswana, between 1962 and 1983. The numbers, sexes and origins are recorded in Tables 1-6. Animals dying during capture and translocation have not been included.

Table 1. Introductions of black rhinoceros to Ndumu Game Reserve.

	ORIGIN	Hluhluwe		Corridor	Umfolozi S*		Mkuzi	
		♂	♀	♂	♂	♀	♂	♀
1962	Sept.			1				
1964	Jan. - June	1		1				1
1965	Jan. - August				1	2	1	
1968	April - Sept.	1			2	1		
1969	Sept. and Nov.			1		1		
1970	April	1						
Total	(16)	3	-	2	4	2	3	1

* area south of Umfolozi Game Reserve.

An immature female was destroyed one month after being introduced from the Corridor in September 1968. It had broken out of the game reserve and wandered into Maputo before returning to an area outside the reserve where it created havoc with the local population. With the exception of the male released in 1970 the animals were not boma held prior to release. As a

result they were agitated and charged the capture vehicles before making off. In contrast, the release of the last male in April 1970 which was held in a brush-wood boma for 13 days was quiet and uneventful.

Table 2. Introductions of black rhinoceros to Umfolozi Game Reserve.

ORIGIN		Hluhluwe		Umfolozi S*		Mkuzi	
		♂	♂	♂	♂	♂	♂
1965	March - August	1		3	1		
1967	October	1					
1973	May	1					
1983	July					1	
Total	(8)	3	-	3	1	1	-

* area South of Umfolozi Game Reserve

The movement of black rhino from Hluhluwe and the Corridor to Umfolozi Game Reserve was purely one of convenience and involved problem animals. In July 1983 a male being held in the bomas at Umfolozi escaped and was not recaptured. One death related to release was recorded in June 1973. The adult male concerned had been released from the main holding bomas one month previously, was resighted 3 km away in poor condition following a fight, and later found dead.

Table 3. Introductions of black rhinoceros to Kruger National Park from Natal.

ORIGIN		Hluhluwe		Corridor		Umfolozi		Mkuzi	
		♂	♂	♂	♂	♂	♂	♂	♂
1971	May - August	7	8	3	2				
1977	October		1		1				
1980	Oct. and November			2	2	3	1		
1981	May and October	8	5	4	4	1		1	1
1982	July	3							
Total	(57)	18	14	9	9	4	1	1	1

In addition to the details given in Table 3 a further twelve black rhino (*Diceros bicornis minor*) were introduced from Zimbabwe in September 1973. Five mortalities occurred soon after the release of the black rhino between 1971-1973. These deaths were unrelated to the translocation operation and no further mortalities have been reported (Hall-Martin, 1980).

Table 4. Introductions of black rhinoceros to Itala Game Reserve.

ORIGIN		Hluhluwe		Corridor		Umfolozi		Mkuzi		Ndumu	
		♂	♂	♂	♂	♂	♂	♂	♂	♂	♂
1973	July and August							1	1		
1977	August			1	1						
1978	May - September	1	2	1	1			1			
1979	May and September							1	3		
1980	August - October			1		4	2	1	1		
1982	October									1	1
Total	(25)	1	2	3	2	4	2	4	5	1	1

The animals introduced in 1973 were kept in a paddock while the Reserve was being fenced. They were eventually released in October 1975. One male released in August 1977 was found dead in September 1977, but the cause of death could not be determined.

Table 5. Introductions of black rhinoceros to Pilanesberg Game Reserve.

ORIGIN		Hluhluwe		Corridor		Umfolozi	
		♂	♂	♂	♂	♂	♂
1981	Sept. - December			1		3	3
1982	May					2	2
1983	June - August	3	2	2			1
Total	(19)	3	2	2	-	5	6

The animals were not boma held except for 3 released in 1981. All the rhinos became successfully established and no major problems were encountered (J. Anderson, pers. comm.).

Table 6. Introductions of black rhinoceros to Weenen Nature Reserve.

ORIGIN		Umfolozi		Mkuzi		Ndumu		Hluhluwe	
		♂	♂	♂	♂	♂	♂	♂	♂
1983	July and October	1	-	1	1	-	1	1	-
Total	(5)								

The Mkuzi male died a few days after release due to its poor condition resulting from old snare wounds.

During the early days of translocations little thought was given to genetic conservation, a concept now considered a basic requirement of nature conservation, (Greig, 1979; Klingel, 1979). Thus Mkuzi and Hluhluwe rhinos were freely mixed. Fortunately the two populations must have been linked in the very recent past so they are derived from the same gene pool and mixing them has not caused any genetic contamination.

However the same cannot be said of rhino introductions to the Addo Elephant National Park. In 1961 and 1962 seven (3 ♂ 4 ♀) black rhino, *Diceros bicornis michaeli* were introduced from Kiboko in Kenya (Hall-Martin & Penzhorn, 1977). These bred well but because they were confined to a small paddock there was a great deal of fighting and five animals were killed. In June 1977 the last of the imported bulls died, leaving only immature males. For that reason 3 adult males were introduced from the Corridor in Natal in October 1977 (Hall-Martin, 1980).

In 1979 one of the males which was earless was castrated in order to prevent the possibility of an aotic inducing gene being introduced into the Addo population (de Vos & Braack, 1980). In 1980 the IUCN/SSC African Rhino Specialist Group proposed the genetic conservation of *Diceros bicornis michaeli* and requested the removal of the *Diceros bicornis minor* males and any mixed parentage progeny thus ensuring a pure population of the Kenya subspecies. In May 1981 the two remaining breeding Natal males were removed and sent to the Kruger National Park (A. Hall-Martin, pers. comm.).

DISCUSSION

A total of 138 black rhino were caught in Natal for translocation to new areas of which 130 survived the capture and transport operations. Most of the deaths occurred between 1962–1965 (5 died out of 19 caught = 26% mortality) and can be attributed to the fairly unsophisticated capture and transport techniques used in the early days, and also the fact that three animals were in poor condition at the time of capture. From 1966–1983, deaths (3 died out of 119 caught = 3% mortality) were due to an accident in the field, advanced pregnancy and old age.

Mortalities recorded following release were also low (overall 6%) with 1 (4%) at Itala Nature reserve, 5(9%) in the Kruger National Park and 1 (20%) in Weenen Nature Reserve (see results). The cause of death at Itala was unknown. The Kruger National Park mortalities were 2 young rhino from botulism, 2 following encounters with a hippo and lion and a leg injury (Hall-Martin, 1980). The Weenen Nature Reserve death was as a result of old snare wounds and the animal's poor condition.

The Natal Parks Board has thus, through translocation from Natal over the last 22 years, successfully increased the distribution of black rhino within its former range in southern Africa and materially improved its chances for survival.

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