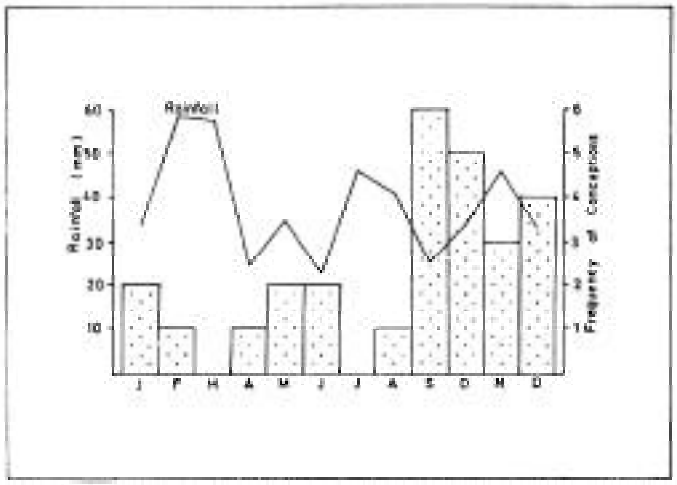

Figure 3. Frequency of conceptions of black rhino in the Addo Elephant National Park (1962-1984).

cation for removing black rhino from Addo. Enlargements to Addo, by the purchase of surrounding land, could ensure that a larger population, ultimately delivering more animals for translocation, could be maintained.

The National Parks Board of South Africa is now fully committed to an extensive black rhino conservation program me. It may be the only organisation controlling viable populations of more than one subspecies of black rhino. It has the Addo population (**D. b. michaeli**) which currently numbers 1 7 animals, a population of 1 .35 **D. b. minor** in the Kruger National Park and 5 **D. b. bicornis** in the Augrabies Falls National Park (this assumes that these animals are recognised as belonging to this subspecies as suggested by Hall-Martin, 1985). During 1987 a further group of 7 **D.b. bicornisare** due to be introduced to the Vaalbos National Park.

Any other available black rhino habitat in South African national parks will be stocked with either **D. b. bicornis** from Namibia or **D.b. minor** from Natal or Kruger. The options of establishing a second **D. b. michaeli** population in a suitable protected area, or returning the surplus animals from Addo to Kenya and Tanzania at some future time remain to be explored.

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Earlessness in the Black Rhinoceros — A Warning

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Unilateral or bilateral earlessness (i.e. lack of pinnae) in the black rhinocerous has been recorded from a number of populations in eastern and southern Africa (Goddard, 1969; Hitchins and Anderson, 1983). These authors have attributed the condition to predation on black rhinoceros calves by spotted hyaena **Crocuta crocuta** whilst Goddard (1969) suggests that a genetic character, a sex influenced or sex—linked gene could also be responsible for a congenital deformity.

The black rhinoceros population in the Hluhluwe/Corridor/Umfolozi Game Reserve complex, has been monitored at various intervals between 1961 and 1985 by the author. Physical characteristics of all individuals seen were recorded over this period, which resulted in comprehensive data on missing ears and/or tails or parts of tails of various individuals. Prior to 1961 earlessness was first observed in early 1955 (N. Deare, pers. comm.) in the north of Hluhluwe Game Reserve: an adult female with its left pinna missing. Later during 1955 a male calf was born with both pinnae missing and with no external openings.

From 1955 to 1985 a total of 23 individuals in Hluhluwe Game Reserve amid Corridor showed the earless condition (one or both pinnae absent) and an additional 15 individuals had either a portion of the tail or the whole tail missing (Table 1; Figures 1, 2 and 3).

In the earless condition (n = 23), 21 animals were examined in the

Table 1. Number of black rhinoceros with missing ears and/or tails or portions of tails in Hluhluwe Game Reserve amid Corridor, 1955-1985.

Sex	One pinna absent	Both pinnae absent	One amid tail absent	One and portion of tail absent	Tail absent	Portion of tail absent
H LU H LUW E:						
Male	7	1	1	2	—	7
Female	3	2	—	—	3	3
Unsexed	1	—	1	—	—	—
CORRIDOR:						
Male	—	1	—	—	—	—
Female	2	1	—	1	—	2
TOTAL	13	5	2	3	3	12

38

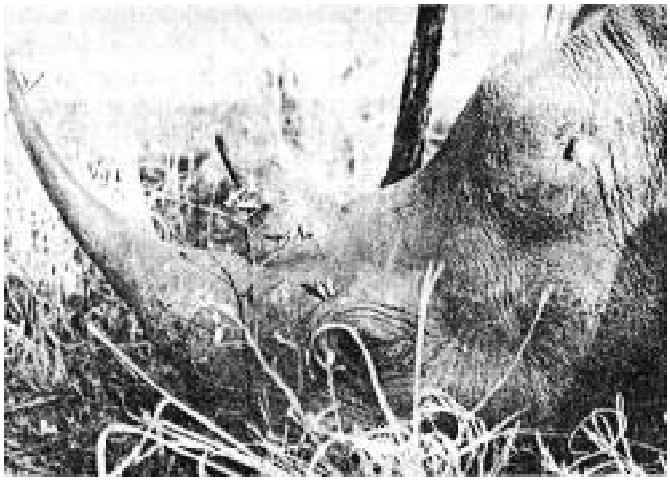

Figure 1. Black rhinoceros male with left pinna absent; note scars.

Figure 2. Detail of ear opening of black rhinoceros male showing prominent scars.

field in detail and showed the following characteristics:

both pinnae absent with no external opening: 1 (no scars);
both pinnae absent with external opening: 3 (scars present);
one pinna absent with no external opening: 1 (scar present);
one pinna absent with external opening: 16 (scars present).

Where tails were missing or damaged (n = 1 5) obvious scars were always visible.

Of the 36 animals examined with missing ears and/or damaged tails, only one showed a congenital deformity. If one considers this single case in relation to the whole black rhinoceros population in the Hluhluwe/Corridor/ Umfolozi Game Reserve complex over a 30-year period (1955 to 1985) the incidence of a genetic character being responsible for earlessness is indeed rare. The impact of hyaena predation on the black rhinoceros population is unknown but is considered to be fairly high in Hluhluwe, low in the Corridor and very low in Umfolozi. Kruuk (1972) observed hyaenas grabbling black rhinoceros calves preferentially by the ears and tail ,at Serengeti which supports the observations inn Table 1.

It is of interest to note that in the square-lipped rhinoceros **Ceratotherium simum simum** there has been no record of any ear or tail losses in the reserve complex from thousands of observations made by the author. There is little doubt that the reason for this is related to predation by spotted hyaenas on black and not square-lipped rhinoceros. This preference is in turn related to the mother-calf relationship when the animals are disturbed: with the square-lipped rhinoceros, a calf always runs in front of the mother

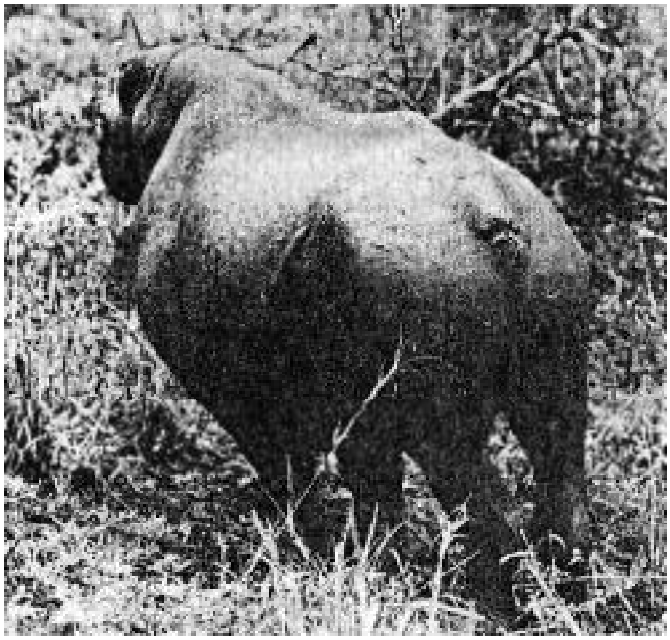

Figure 3. Young black rhinoceros male with tail (note scar) and left pinna missing.

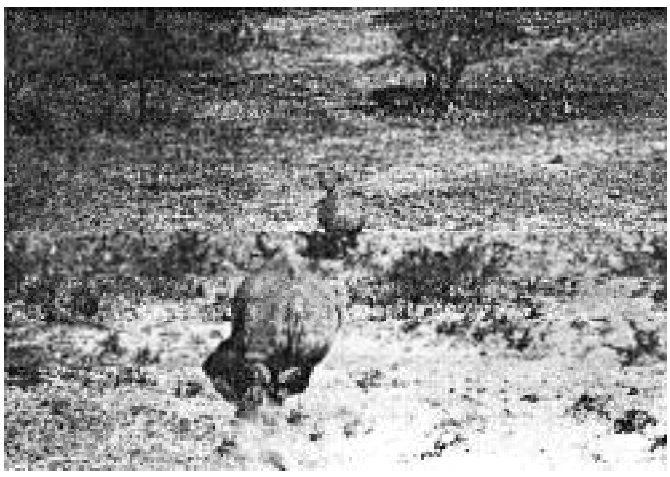

Figure 4. Disturbed square-lipped rhinoceros, mother and calf in flight.

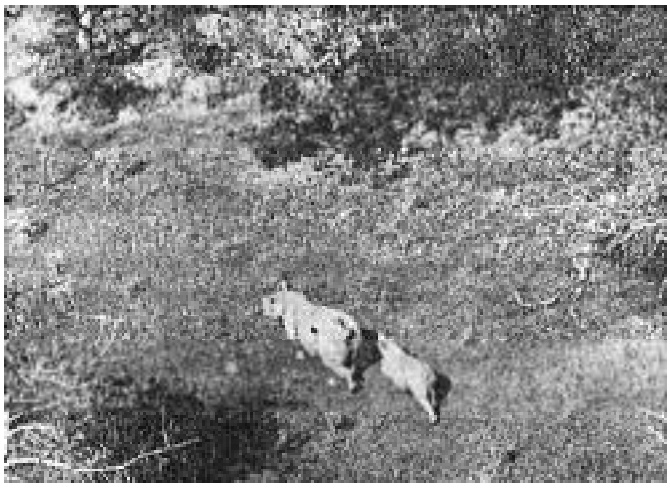

Figure 5. Disturbed black rhinoceros, mother and calf in flight.

(Figure4) which has total contact with its calf, whereas the black rhinoceros calf follows the mother with very little contact and therefore less protection (Figure 5). Both these relationships are related to the different habitat requirements of these two species.

THE WARNING:

In 1977 a black rhinoceros male lacking one pinna was introduced to the Addo Elephant National Park from Hluhluwe Game Reserve. It was later successfully castrated to prevent the possibility of an earless inducing gene being introduced into the Addo population (de Vos and Braack, 1980). Subsequently it has been destroyed as it no longer served a reproductive function in the park (J. Flamand, pers. comm.). The animal had been a familiar resident of Hluhluwe Game Reserve prior to its translocation and was known to have been born with both pinnae. Scars that were subsequently seen around its ear opening indicated that the animal was no exception to the general rule that earlessness in the Natal black rhinoceros is due to hyaena predation. The castration exercise was clearly ill-considered and the presumption that rhinoceros earlessness is necessarily a genetic condition is to be avoided in future.

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Re-Establishment of Elephant in the Hluhluwe and Umfolozi Game Reserves, Natal, South Africa

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Prior to the advent of European influence in Southern Africa, elephant were widely distributed throughout Natal and Zululand. The elephant populations in this area were decimated during the "Great White Hunter" era and the last elephant in the Hlabisa district of Zululand was reputedly shot in 1890. It is only in the unspoilt Mozi swamps and Sihangwane forests in the very northern part of Zululand that a remnant population of elephant survives. This population numbers between 75-150 and moves back amid forth across the international boundary between Mocambique and South Africa. Fortunately, the elephants are now protected on the South African side of the border with the recent proclamation of the Tembe Elephant Reserve, which falls under the control of the KwaZulu Legislative Assembly.

Tine Natal Parks, Game and Fish Preservation Board (henceforth termed the Board) controls a number of conservation areas in Zululand, the largest being the Hluhluwe and Umfolozi Game Reserves; these are joined by a corridor of state land (the whole area being approximately 900 square kilometres). The Board's primary objectives for these areas are to conserve a wide variety of habitat types and their associated indigenous species and to allow ecological processes to operate without interference (except where these processes have been impaired in some way). In line with these objectives it is the Board's policy to re-establish species in conservation areas where they have been eradicated.

Three major factors motivated the Board to re-establish elephant in the Hluhluwe and Umfolozi Game Reserves. (1) Elephant occurred naturally in the reserves and have been locally extinct for just under 100 years. (2) Since the reserves were proclaimed in 1985, the tree and shrub component of the vegetation has increased to the extent that the thicket, woodland and forest habitats are encroaching severely upon the more open savanna, grassland and wetland habitats. One of the major ecological factors that was removed from the area is the destructive feeding habit of elephant, and it is thought that the increased woody component is due, at least im part, to their absence. (3) Since elephant are classified asa special caseof threatened species by IUCN, the establishment of two interlinked populations of elephant in Natal would improve the status of this species in Africa. Furthermore, this would add considerably to the biological and conservation status of the reserves.

POTENTIAL PROBLEMS

During the planning of the re-establishment programme three potential problems were identified:

1. Would elephant break through die reserves' boundary fence?
   In some parts of Africa elephants move over large distances. If the re-introduced elephant were to exhibit this type of movement pattern and break through the fence they might cause socio-political problems by: (i) damaging the property of the adjacent subsistence farming community, or (ii) allowing other animals (particularly large carnivores such as lion, leopard, hyaena and cheetah) to leave the reserves.
2. Would the elephant damage the reserves' vegetation to an unacceptable level?
   This question may seem contradictory to one of the motivations for re-establishing elephant in the reserve, but it refers specifically to the possibility of the elephant selecting strongly for endangered or endemnic plant species which have higher priority for conservation than elephant.