Earlessness in the Black Rhinoceros — A Warning

P.M. Hitchins
P.O. Box 8, Mfolozi, Zululand 3925, South Africa

Unilateral or bilateral earlessness (i.e. lack of pinnae) in the black rhinoceros 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 and 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 field

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

Sex	One pinna absent	Both pinnae absent	One and tail absent	One and portion of tail absent	Tail absent	Portion of tail absent
HLUHLUWE:						
Male	7	1	1	2	—	7
Female	3	2	—	—	3	3
Unsexed	1	—	1	—	—	—
CORRIDOR:						
Male	—	1	—	—	—	—
Female	2	1	—	1	—	2
TOTAL 38	13	5	2	3	3	12

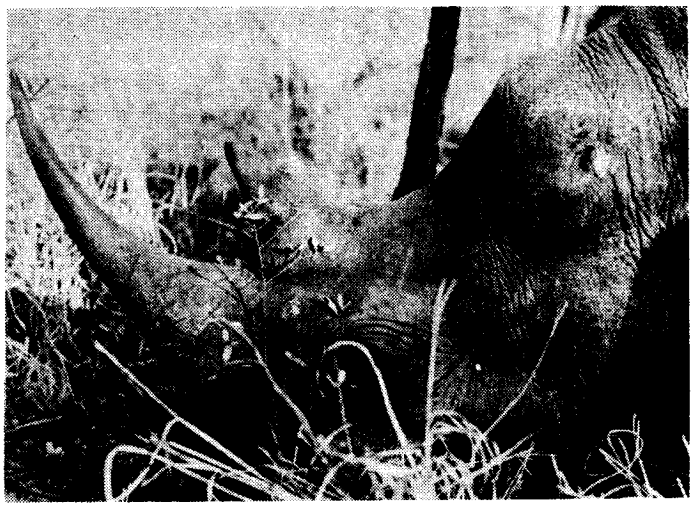

Figure 1. Black rhinoceros male with left pinna absent; note scars.

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 = 15) 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 grabbing black rhinoceros calves preferentially by the ears and tail at Serengeti which supports the observations in 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

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

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.

rhinoceros, a calf always runs in front of the mother (Figure 4) 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.

REFERENCES

GODDARD, J. (1969). A note on the absence of pinnae in the black rhinoceros. East African Wildlife Journal, 7: 178-180.

HITCHINS, P.M. and ANDERSON, J.L. (1983). Reproduction, population characteristics and management of the black rhinoceros **Diceros bicornis minor** in the Hluhluwe/Corridor/Umfolozi Game Reserve Complex. South African Journal of Wildlife Research, 13: 78-85.

KRUUK, H. (1972). The Spotted Hyaena: A Study of Predation and Social Behaviour. University of Chicago Press, Chicago.

DE VOS, V. and BRAACK, H.H. (1980). Castration of a black rhinoceros **Diceros bicornis minor.** Koedoe, 23: 185-187

From P 5 (Pygmy Elephant):

logischeer Anzeiger, 29: 631-633.

OFFERMANN, P. (1951). Les elephants du Congo Belge. Corps des Lieutenants Honoraires de Chasse du Congo Belge. Leopoldville. Bulletin III (9): 85-95.

PETTER, G. (1958). A propos de quelques petits de elephants de foret attribues a **Loxondonta cyclotis** Matschie. Mammalia, 22 (4): 575-590.

PFEFFER, P. (1960). Sur le validite de formes naines de l'elephant d'Afrique. Mammalia, 24 (4): 556-576.

SHORT, J. (1983). Density and seasonal movement of forest elephant **Loxondonta africana cyclotis,** Matschie in Bia National Park, Ghana. African Journal of Ecology, 21: 175-184.

SPINAGE, C.A. (1959). An apparent case of precocious tusk growth in a young elephant. Proceedings of the Zoological Society of London, 133: 45-46.

VANZOLINI, P. E. (1973). Paleoclimates, relief and species multiplication in equatorial forests. In: Meggers, J., Ayensu, E. S. and Duckworth W. (Eds.). Tropical Forest Ecosystems in Africa and South America: A Comparative Review. Smithsonian Institute, Washington.

WHITTAKER, R. H. and LIKENS, G. E. (1973). The primary production of the biosphere. Human Ecology, 1 (4): 299-369.