

Table 2
Ear tag and streamer loss in the black rhinoceros in Hluhluwe game reserve.

Marking method	n	No. days before loss:	
		Range	Average
Metal or Fibreglass discs	5	86-171	130
Jumbo roto tag	8	81-506	314
Ketchum metal tag	5	141-473	232
Ear streamer: jess knot	3	132-1987	165
Jumbo roto plus streamer	7	141-163	155
Ketchum metal tag plus plastic disc	5	28-171	90
Visotag	2	33-82	58

- ANDERSON, F. and P.M. HITCHINS. 1971. A radio tracking system for the black rhinoceros. *South African Journal of Wildlife Management* 1(1): 26-35.
- GODDARD, J. 1967. Home range, behaviour and recruitment rates of two black rhinoceros populations. *East African Wildlife Journal* 5: 133-150.
- HALL-MARTIN, A.J. and B.L. PENZHORN. 1977. Behaviour and recruitment of translocated black rhinoceros *Diceros bicornis*. *Koedoe* 20: 147-162.
- HAMILTON, P.H. and J. KING. 1969. The fate of black rhinoceroses released in Nairobi National Park. *East African Wildlife Journal* 7: 73-83.
- HANKS, J. 1969. Techniques for marking large African mammals. *Puku* 5: 65-86.
- HITCHINS, P.M. 1971. Preliminary findings in a telemetric study on the black rhinoceros in Hluhluwe Game Reserve, Zululand. Pp. 69-100. In: *Proceedings of a symposium on Biotelemetry, Pretoria*.
- KLINGEL, H. and V. KLINGEL. 1966. The rhinoceroses of Ngorongoro crater. *Oryx* 8(5): 302-306.
- LEADER-WILLIAMS, N. 1985. Black rhino in South Luangwa National Park: their distribution and future protection. *Oryx* 14: 27-33.
- THOMSON, P.J. 1974. Rhino collars in research. *Wildlife Rhodesia* 5: 13.
- WESTERN, D. and D.M. SINDIYO. 1972. The status of the Amboseli rhino population. *East African Wildlife Journal* 10: 43-57.

The Auxiliary Game Guard System in northwestern Namibia and its role in black rhinoceros *Diceros bicornis* conservation

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In 1970, on the recommendations of the Odendaal Commission (appointed in 1962 by the South African government), the Kaokoveld and the western extension of the Etosha Game Park were deproclaimed in order to create homelands for the Herero and Damara speaking people residing in north-western Namibia. At that time, the deproclaimed area of some 16 000 km² had well in excess of 1 000 elephants *Loxodonta africana* (Blumenbach, 1797) and possibly more than 300 black rhinoceros *Diceros bicornis* (Linnaeus, 1758). In spite of assurances that measures would be taken to protect the wildlife of the region, nothing was done, and large-scale illegal hunting — including the poaching of elephant and black rhinoceros for ivory and horn — commenced during the early 1970s.

During the severe drought of 1980-82, more than 80 percent of the region's cattle, as well as large numbers of small stock succumbed having a serious effect on the pastoralist economy of the Herero, Himba and Damara people, leaving many of them destitute. The local tribesmen of Kaokoland and Damaraland now had the motivation and means to hunt big game as a means of subsistence. Towards 1981 both elephant and rhinoceros had been extirpated throughout virtually the whole of Kaokoland (Owen-Smith 1984).

In the late 1980s the Namibian Directorate of Nature Conservation took over the responsibility for nature conservation in Namibia's communal areas. Concerned about the critical conservation situation in northwestern Namibia, the Namibia Wildlife Trust, the Endangered Wildlife Trust, the People's Trust for Endangered Species (U.K.), the Foundation to Save African Endangered Wildlife (New York), the Wildlife Society of South West Africa, mining and business houses as well as concerned private individuals joined forces to assist the Directorate's anti-poaching campaign in the region. It was understood, however, that the cooperation of the local Herero headmen of southern and western Kaokoland in such a venture was most essential. After prolonged discussions, the Auxiliary Game Guard System (AGGS) was devised. It exploited the knowledge and experience of the local population for the benefit of conservation on the one hand, while on the other hand, it provided basic living commodities to families that were struggling to build up their flocks after the drought.

With the onslaught against the black rhinoceros in Africa moving steadily southward, the role the AGGS has played and will play before and after independence in Namibia is crucial to the success of a protection strategy for the black rhinoceros in northwestern Namibia.

OWEN-SMITH, G. 1984. Namibia's most valuable resource. *Quagga* 7: 8-11.

Black rhinoceros *Diceros bicornis* capture and translocation techniques as used in Etosha National Park

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Since the appointment in 1953 of a full-time researcher in the Etosha National Park the scientific activities within the park have greatly increased in extent and scope, especially as far as capturing and translocation of game are concerned (Ebedes 1966; Hofmeyr 1975; Hofmeyr & De Bruine 1973; Ebedes, Leibnitz & Joubert 1977). These developments have also been prompted by the decline in the black rhinoceros *Diceros bicornis* (Linnaeus, 1758) population in Namibia, necessitating the development of capture and translocation techniques.

During the 1960s the late Bernabe de la Bat, then Director of the Department of Nature Conservation and Tourism of SWA/Namibia, became concerned about the continued survival of black rhinoceros in that country. At that stage the entire population consisted of 90 animals (Schoeman 1984), all of which were in the northwestern part of the country in an area over which the department had no jurisdiction, and where poaching was rife. Under de la Bat's direction a capture and relocating programme was initiated. A total of 43 black rhinoceros were caught (Hall-Martin, Walker & Bothma 1988) in Kaokoland and released in the Etosha National Park (as defined by the Odendaal Commission). In 1984 there was a viable population of over 300 animals in the park (Schoeman 1984). The launching of this far-sighted, significant and successful undertaking to conserve the black rhinoceros in this part of Africa secured the well-being of the species in this area.

Had this action not been taken, it is likely that many of these animals would have been shot, and Etosha would not have had one of the largest populations in Africa today. This exemplary result could not have been achieved without the development of an effective capture and translocation technique which was undertaken by the Department and implemented and streamlined over the years.

EBEDES, H. 1966. Gemsbok and black rhinoceros immobilisation with M99. Report No 48, Reckitt & Sons Ltd, Hull.

EBEDES, H., E. LEIBNITZ and J. JOUBERT. 1977. The immobilisation of wildebeest *Connochaetes taurinus* with etorphine and the use of diprenorphine as an etorphine antagonist. *Madoqua* 10(1): 71-73.

HALL-MARTIN, A.J., C. WALKER and J. DU P. BOTHMA. 1988. *Kaokoveld. The Last Wilderness*. Johannesburg: Southern Books.