

## **DEHORNING OF BLACK RHINOCEROS (*Diceros bicornis bicornis*) IN NAMIBIA**

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### **INTRODUCTION**

Namibia experienced a marked upsurge in the poaching of black rhinoceros (*Diceros bicornis bicornis*) in 1989. In a short period 25 rhino were killed with significant losses from the unique desert adapted black rhino population found in the Kaokoveld. Escalating horn prices, declining rhino populations in other African countries and a smouldering bush war in northern Namibia all contributed to the upsurge. As part of a larger strategy to protect the Namibian black rhino the Directorate of Nature Conservation initiated a program to remove the horns of the most vulnerable populations in Damaraland (part of the Kaokoveld) that year. Positive results from that first dehorning exercise and continuing poaching problems have resulted in the operation being repeated in Damaraland in 1991. A new rhino sanctuary was also established in Namibia with dehorned rhino in 1990.

### **FACTORS INFLUENCING THE DECISION TO DEHORN BLACK RHINO IN 1989:**

1. Damaraland is a vast semi-desert area in north western Namibia. It is an area of barren mountains, acacia scrub, gravel plains and sand rivers. It is a peasant farming area and no part of it has any formal conservation status. Pastoralists live with their stock around springs and boreholes through out the area. Unemployment and poverty are rife in the towns and rural areas and many tribesmen have firearms, including semi-automatic and automatic weapons acquired during the guerrilla war. These factors have all contributed to an increase in the poaching of wildlife, especially rhino.
2. The Directorate of Nature Conservation lacked the personnel, equipment and funds to increase the protection of rhino in Damaraland - even with the assistance of non-government organizations like Save the Rhino Trust Fund.
3. The rhino population of Damaraland is small and scattered over a huge area. Low population densities and formidable natural and man-made barriers (veterinary cordon fence) limit interaction between rhino and populations of rhino. The chance of dehorned and horned rhino coming into contact and fighting with each other is small.
4. In Damaraland it is usually possible to see rhino from a distance in the open terrain in which they occur and a poacher should therefore be able to see if a rhino had been dehorned prior to shooting.
5. The rhino in Damaraland have been intensively monitored for a number of years and nearly all have been identified. It is therefore possible to dehorn all rhino in an area. No rhino would be left out and all would be equally disadvantaged.
6. There are very few large predators in Damaraland (probably less than 20 spotted hyaenna and 10 lion) and therefore the increased risk of predation is unlikely to be significant.
7. Black Rhino in Damaraland appear to make little use of their horns for feeding purposes.

8. The rhino in Damaraland are adapted to a very extreme environment and although they could be translocated out of the area to other sanctuaries, it would be extremely difficult to reintroduce black rhino back to the area at a later stage. It was felt that a good core population of rhino must be protected *in situ*.
9. The rhino's horns regrow slowly and if poaching could be halted, the program could be stopped and the animals allowed to grow their horns back.
10. Our directorate had the services of an experienced capture team to do the operation. This meant that the dehorning operation could be done relatively cheaply and with minimal mortalities.

## **METHOD**

The rhino to be dehorned are located by trackers. The helicopter is called in and the rhino are darted (Morkel 1989). The immobilised rhino is placed in sternal recumbency and the vital functions are checked (and monitored throughout the procedure). The immobilisation dart is removed and the dart wound treated. Antibiotics are administered. If the rhino's body temperature is elevated it is doused with water. A pillow is placed under the head and the eyes are covered with a cloth to prevent dust and grass seeds being blown into the eyes. A rhino's horns have a concave base where they fit over the nasal bones. This is especially marked with the front horn. For this reason the front horn is removed at 6.5 cm from the base and the back at 5 cm from the base. Even in the case of young rhino with small horns it is safer to cut at these positions and then trim down the excess horn. The horns are cut off using a crosscut woodsaw (with handles on both ends) or a bowsaw. Water poured on the saw blade facilitates the sawing action. Excess horn is removed with hoof clippers. The stump is rasped and Stockholm tar, an antiseptic, is then painted on.

The antidote diprenorphine (M5050) is administered into an ear vein as soon as the procedure is finished and all vehicles, equipment and personnel have been moved away from the scene.

The procedure is carried out as rapidly as possible to limit the stress to the rhino and is usually completed within half an hour. While the dehorning is being carried out the rhino is aged, measured, identified by ear nicks, hoof nicks. Ear tags are applied and a number is painted on the rhino. Fecal, blood and parasite samples are taken. Identification is important for monitoring after dehorning and to prevent time being wasted on tracking rhino that have already been dehorned.

Cows and calves are immobilised and dehorned simultaneously. If the calf is small enough it is picked up and placed behind the cow prior to giving the antidote to both animals. Special emphasis is placed on making sure that there is minimal disturbance after antidoting a cow and calf so that they come together on waking up.

## **RESULTS**

Two subpopulations of rhino have been dehorned in Damaraland, one in 1989 and other in 1991. A new sanctuary has been established with dehorned rhino. No rhino were lost during the capture and dehorning process.

No difference has been observed in the behaviour of dehorned rhino. Three calves have been born to dehorned cows and mating has been observed between dehorned rhino. Two dehorned rhino have been translocated to a new sanctuary. No dehorned rhino have been poached.

Horn growth of the two young dehorned rhino which were translocated was worked out at 7 - 8 cm/year for the front horn and about 5 cm/year for the back horn. Horn regrowth in

old animals appears to be slower than in younger animals. With horn growth like this it will be necessary to repeat the procedure every two to four years for it to be a deterrent.

Mention must also be made of some observations made on the nature of the rhino horn. Rhino horn cuts relatively easily. Horn near the base cuts like green wood. The outer horn at the horn base is drier and very tough. The "white" outer horn is easy to cut through with a consistency similar to a horse's hoof. In the centre of the horn is a more "fibrous" oval of darker horn. The horn tip is extremely hard and appears to only consist of the darker horn. The tip cuts easily with a saw but not with hoof clippers. It appears that the dark central horn forms the more rigid core of the horn.

## DISCUSSION

Although it would be premature to say that dehorning is a success, it nevertheless appears to be a reasonable option. No major biological problems have been observed with the rhino and no poaching of the dehorned rhino has occurred. Word has been received of poachers that came into an area and on hearing that the rhino were dehorned decided to look elsewhere. In fairness, since dehorning was initiated there has been no major rhino poaching in the country and only with a more serious poaching threat will we truly be able to see if dehorning is effective. We did not have the luxury of time to study the long-term effects of dehorning on a smaller rhino group prior to embarking on the program. We do however now have a full time researcher doing a study on the effects of dehorning on the rhino.

Although no rhino were lost during the operations, immobilising rhino in the rugged terrain of Damaraland remains a risky procedure. Rapid immobilisation is essential to limit the chance of the rhino running into gullies or over cliffs during the induction period when the immobilisation drugs are having their effect. Rapid immobilisation was achieved by using relatively high doses of etorphine, by using the sedative xylazine rather than azaperone, by adding hyaluronidase to the etorphine to facilitate absorption and by ensuring good dart placement. Very rapid immobilisation was achieved with induction times between 2 min 20 sec and 4 minutes. If the rhino was in extremely bad terrain, e.g. on the side of a mountain, it was first slowly driven with the helicopter to more favourable terrain before darting. If there was no favourable terrain within easy driving distance then the rhino was left rather than risking a possible mortality.

A helicopter was used during the operations for the following reasons:

1. In the open terrain of Damaraland it is often difficult to approach the rhino on foot to within a darting distance.
2. A helicopter can be used to drive a rhino to more favourable terrain before darting and to keep the rhino in such terrain after darting.
3. The helicopter can drop someone with the rhino immediately it goes down to take care of the animal and give antidotes and stimulants if necessary. This is important with the higher doses of etorphine used.
4. The helicopter is useful when doing cow/calf combinations.
5. The helicopter is also used to spot rhino and to pick up fresh tracks.

The helicopter was the biggest expense. Labour, vehicles, fuel, drugs and darts also added to the cost of the operation. On an average it cost approximately US \$ 1500 to dehorn each rhino

Rhino cows with calves posed a problem. We did not want the dehorning to result in the cow and calf splitting up. This could obviously have resulted in the loss of the calf. Young

calves were immobilised and placed next to their dam before waking both animals up. Calves were darted at the same time as their dams. Usually they would go down close to each other. With small calves it was possible to transport them and place them behind their mothers prior to waking both up. We did not paint Stockholm tar on the stumps of cows with calves thinking that the strong smell of the tar might result in the animals failing to recognise each other. It was important to move all vehicles and personnel away from the area prior to antidoting the cows and calves. If disturbance was minimal the cows and calves came together without problems.

Dehorning is only part of the whole strategy to prevent poaching. Without the other facets, e.g. anti-poaching patrols, persecution of poachers, population monitoring, acquisition of formal conservation areas, translocation, education, and making conservation a economic resource, the dehorning exercise would be futile.

Recently our legislation was improved and there is now a fine of SA Rand 200,000 or 20 years imprisonment or both for people found guilty of poaching rhino. Hopefully a poacher will realise that the monetary gain to be made from the small amount of horn remaining and other "usable" parts like skin, feet, tail, genitalia, etc., is more than offset by the new penalties for poaching rhino. All cases of rhino poaching for the past few years have been vigorously investigated and most of the poachers brought to trial.

The actual dehorning was distasteful to all involved but it was by far the lesser of the two evils - dehorned or dead. We are happy that we did it and that it went well and we are proud of our dehorned rhino conserved *in situ*.

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