

the Wildfowl and Wetlands Trust centre at Martin Mere as well as managing E.S.B.U., and dearly wishes that there were 48 hours in every day! E.S.B.U. aims to work closely with zoos, museums and other institutions on the captive breeding of some of the smaller (and less 'popular') endangered species, and to act as a repository for growing captive populations as well as developing its own programmes for species such as the Pyrenean brook salamander and Kerry spotted slug. Naturally this costs a lot of money and time, and occupies space which is now severely limited. The work of the Centre badly needs a sponsor who may be able to offer a permanent home for the collection and/or funding for its further development. If anyone out there can help, I would be pleased to hear from you.

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P.J. Wisniewski, Wildfowl and Wetlands Centre, Martin Mere, Burscough, Ormskirk, Lancs. L40 0TA, U.K.

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## ZIMBABWE'S RHINO DEHORNING PROGRAMME

BY ANDREW PINCHIN

Despite all efforts, wild black rhino numbers have plummeted dramatically in recent years, and the species is now in real danger of extinction. Zimbabwe — once heralded as the last true stronghold of the black rhino — has seen its population crash from up to 2,000 animals to less than 400 in the past decade. Faced with this critical situation, and knowing that positive action is required sooner rather than later if the black rhino is to be saved, the government's Department of National Parks is looking beyond the conventional methods of protection which have so conspicuously failed to deliver the goods.

Pioneered in Namibia on vulnerable populations of black rhino in 1989, dehorning was demonstrated to be a feasible exercise and early research suggested a subsequent reduction in poaching activity (Gene, 1990). Encouraged by this, Zimbabwe began to dehorn white rhino in Hwange National Park in May 1991. Although the original intention was to run a small-scale pilot operation to assess the effectiveness of the procedure, events were moved along by the mounting crisis and dehorning was soon adopted as a mainstream conservation strategy. Black rhino were brought into the programme in May 1992, and it is now policy to dehorn all of Zimbabwe's rhino as quickly as possible — on both state and private land. To date, over 125 white rhino have been dehorned in Zimbabwe, and in excess of 150 black rhino.

Whilst a few problems with anaesthesia were experienced in the early stages, which led to five white rhino being lost out of the first 34 dehorned (Kock, 1991), optimum drug doses and protocols were soon established, and the mortality rate is now virtually zero for both the white and black species. The rhino suffer no long-term ill effects as a result of being immobilised for dehorning, and there is no reason to believe they find it a particularly unpleasant experience. Rhinos are frequently seen within a very short time back in the localised areas they occupied prior to dehorning, and the veterinarians working on the dehorning programme are confident that the stress factor is in most cases 'very minimal'. The immobilising drug used is a combination of M99 (etorphine hydrochloride) and xylazine (approximately 3.5 to 4.0 mg and 100 mg respectively); 2,000 International Units of hyaluronidase (an enzyme) are also added to facilitate absorption of the drug. The darts are fired from modified rifles using compressed air or .22 blanks. The rhino may be darted from the ground or by helicopter, and is typically immobilised within 3-4 minutes, during which time it may run up to a kilometre.



*Drs Mike Kock and Mark Atkinson preparing darts prior to a black rhino dehorning exercise in Matopos National Park. (Photo: Andrew Pinchin)*

Dehorning is carried out with a 13-inch chain-saw. To minimise the risk of complications associated with anaesthesia, the period of immobilisation is kept as short as possible (usually less than 40 minutes). The condition of the animal (respiration, rectal temperature

etc.) is repeatedly monitored whilst it is down. A cloth is placed over the eyes to protect them throughout the procedure. Afterwards, the stumps are painted over with Stockholm tar — largely to make them less attractive to poachers. Any cuts are sprayed with antibiotic (oxytetracycline), and intramuscular shots of a combined penicillin antibiotic are given. Various samples are taken before the animal is revived, including blood, saliva and an ear nick for DNA analysis. A tiny transponder is implanted under the skin of the forehead and larger nicks taken from the ears for future identification purposes. Notches are cut into the underside of the hooves of one foot with the chain-saw so that the same animal is not fruitlessly tracked again. Similarly, a large number is painted in white on the back of the rhino so as to be visible from the air. The reviving drug used is naltrexone, and recovery takes place within a matter of seconds.

As regards the effectiveness of dehorning, Dr Mike Kock — Senior Veterinarian with the Department of National Parks — estimates that dehorned rhino are around 60% less likely to be poached than their horned conspecifics. It would be unrealistic to expect dehorning to confer total protection, and nine dehorned rhino have so far been killed by poachers in Zimbabwe. After tracking a rhino for several days only to find it has no horns, it is quite possible that a poacher will shoot it anyway for the small vestiges of horn which remain, to prevent fruitless tracking of the same rhino again, or simply out of sheer frustration. Cases may also occur where a rhino is killed before the poacher is aware it has been dehorned, because of thick bush cover. Perhaps most worrying of all is the suggestion that horn speculators may instruct the poachers they employ in the field to kill all rhino they encounter, whether horned or otherwise, because to hasten the demise of these animals will enhance the value of their horn stockpiles.

On the positive side, examination of poachers' spoor on several occasions has revealed that a dehorned rhino was tracked but then left in peace. Furthermore, the greater the proportion of rhino dehorned, the greater the degree of immunity afforded. As noted by Dr Kock, 'Once all the rhino in a given area have been dehorned, the poachers are unlikely to move in and risk being shot for a few dollar's worth of scrapings.' Interestingly, it appears that the poachers from Zambia (who are in the majority) are being paid not only for the weight of the horn but for its integrity and shape, and a small stub from a dehorned animal is worth far less than the equivalent portion of an intact specimen.

For her doctoral thesis, Janet Rachlow — a research student from the University of Reno in Nevada — is undertaking a three-year study of the dehorned white rhino in Hwange National Park, partly to determine the effect removing the horns from a rhino has on its behaviour and capability for survival. Here too, results to date give cause for optimism. Dehorned bull rhino have been seen to defend their territories successfully against other horned bulls, no increased susceptibility of calves to predators has been observed, and there is no evidence to suggest breeding performance is in any way impaired. With a woefully inadequate Parks budget, and resources for other means of protection at an all-time low, dehorning represents perhaps the last

line of defence for Zimbabwe's dwindling rhino populations, in the absence of which it would be difficult to harbour much hope. 'If we weren't out there dehorning now,' says Dr Kock, 'we'd be able to do nothing but count carcasses — and lots of them.'

Quite apart from the direct conservation implications, the dehorning programme has provided the ideal opportunity for research to be carried out on various aspects of rhino biology. The most effective drug doses and combinations for immobilisation have now been established, and whilst under anaesthesia, blood and other samples taken from each rhino provide vital baseline information. Horn regrowth is being carefully monitored, and data so far indicate an initial growth rate of 5-6 cm per year, necessitating a repeat of the dehorning procedure after approximately 18 months. Most importantly of all, by going out into the field and locating rhino for dehorning, accurate population estimates have been obtained, which were markedly absent beforehand.

With the expense of maintaining air cover (for locating and darting the rhino) added to that of purchasing the required equipment and drugs, dehorning is a costly business and additional sources of funding are always being sought. To this end, the intriguing possibility of offering 'darting safaris' to wealthy foreign nationals has been mooted. There is no shortage of clients willing to pay large sums of money for such a hunt, which would proceed very much as normal, the only difference being that the rhino would be shot not with a bullet but with a drug-loaded dart under the supervision of an experienced vet, and photographs would be of an immobilised rather than a dead animal. The rhino would then be dehorned, and depending on CITES regulations, the hunter might be permitted to keep the horns as a trophy. There are still enough horned rhino in Zimbabwe for this to be a real option if the practicalities can be overcome, and a draft proposal has been prepared by the Department of National Parks and submitted to the Minister for Environment and Tourism for consideration.

The obvious way of generating funds, which could put not only dehorning but the entire national black rhino conservation programme on a sound economic footing, would be to sell the horns. Whilst this is a deeply contentious issue — and certainly not in favour in the wealthier developed countries — many conservationists in southern Africa feel that the time is right for a controlled legal trade in horn to be introduced. The total cost of dehorning a rhino is estimated to be around Z\$2,000, whereas an average horn yield of four kilograms from one rhino is worth some US\$8,000 at today's black market rate. Zimbabwe argues that the sale of horns from just a few animals could pay for the entire dehorning programme, and if the Department of National Parks could offload its rhino horn stockpile — worth over US\$5 million — onto the international market, the positive implications for wildlife in the country would be incalculable.

Given the situation as it stands today, adequate resources for protection rather than efforts to stem the booming illegal trade in horn are likely to be the key to African rhino conservation. Dr Kock feels strongly that a strictly regulated and monitored trade in rhino horn would provide a way out — perhaps the only way out — of the

spiralling crisis. 'We need conservation programmes which generate their own funds and are sustainable on a long-term basis,' he says. 'Conservation will fail in Africa if it is supported entirely by Western donors.'

Horn trade or no horn trade, the black rhino is in real trouble. Whilst clearly not the ultimate answer to conserving this species, dehorning might just provide an all-important 'breather', during which longer-term measures can be brought into effect. If this objective is achieved — and there is every reason to believe it will be — the programme will have been eminently worthwhile, and in the meantime it deserves the full support of conservation organisations and donors worldwide.

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Andrew Pinchin, Bristol University Veterinary School, Langford, Bristol BS18 7DY, U.K.

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