Dehorning rhinos

by Raoul du Toit and Natasha Anderson

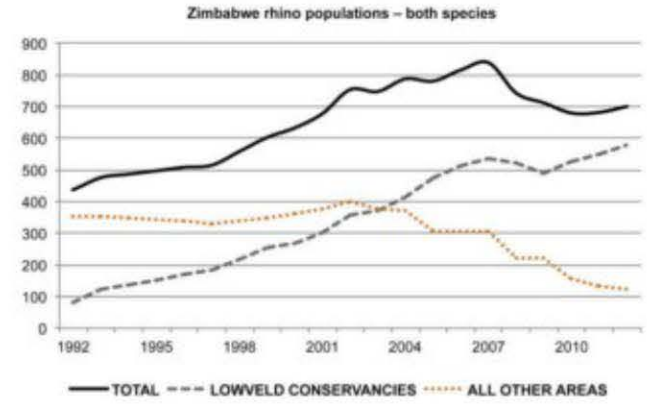
The Lowveld Rhino Trust has gained experience over two decades during which rhinos have been dehorned in large conservancies in the Lowveld region of southern Zimbabwe. A summary of this experience is provided, but it should be noted that some caveats apply to the applicability of this experience across the full range of rhino management situations in southern Africa.

Currently rhino poaching is conducted mainly by well-organised syndicates, some of which have strong cross-border links with South African poaching and trading networks. Poaching in the Lowveld conservancies has reduced since 2008 mainly due to:

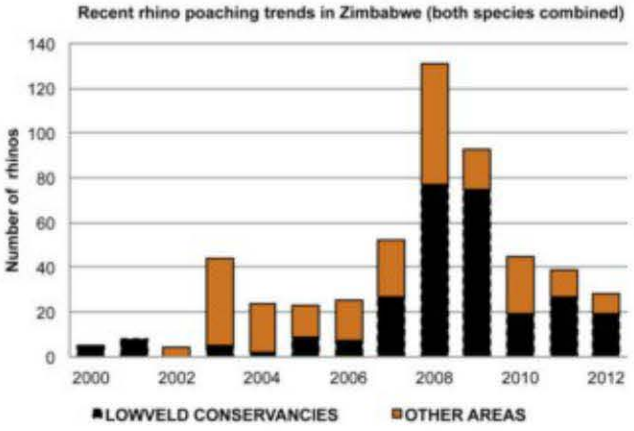
- Concerted action against poachers, facilitated by intelligence systems, resulting in a higher proportion of poachers being arrested or shot in armed encounters.
- Strategic translocations of rhinos from unsafe areas to safer areas.

On average, 34 rhinos (black and white) have been dehorned in Lowveld conservancies each year over the past six years. This dehorning has included only a proportion of rhinos within a population, owing to the high cost of doing so. Dehorning has been opportunistic (i.e. when rhinos are immobilised for other reasons such as translocation, treatment of injuries, ear-notching, etc.) or

Trends in rhino populations in Zimbabwe (total population of black and white rhinos, population of both species in three Lowveld private conservancies, population of both species in the rest of Zimbabwe)



Recent rhino poaching trends in Zimbabwe (both rhino species combined)



strategic (e.g. dehorning rhinos that live near a main road that poachers tend to use for access).

Dehorning is undertaken to reduce rewards for poachers within a reward/risk equation:

Poaching pressure =
Reward to poacher (illegal sale of horn)

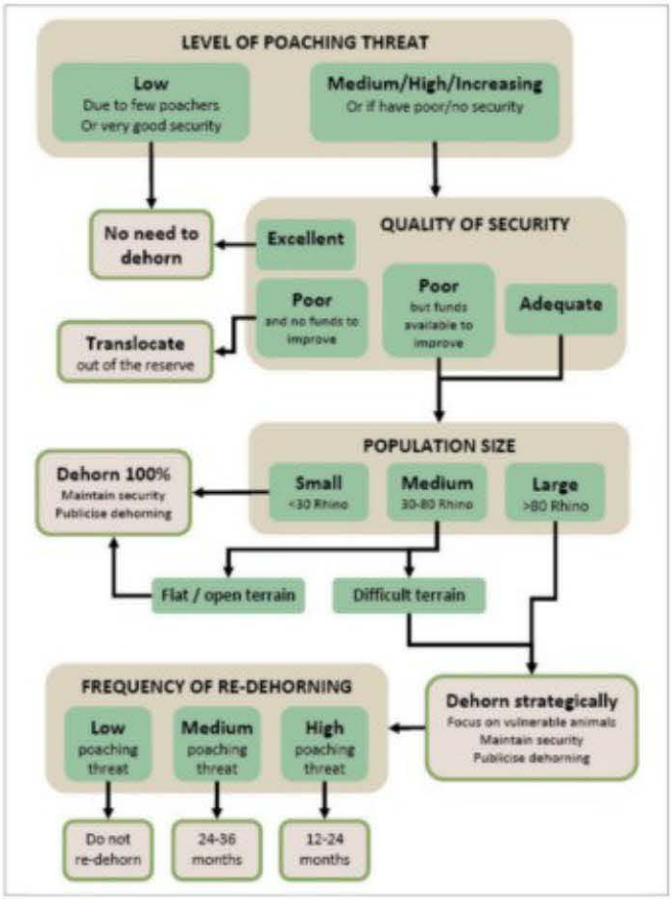
Risk to poacher (of being arrested or shot) x Effort required to poach

Dehorning reduces the amount of horn that the poacher can obtain by killing a rhino and therefore the payment that he receives from the sale of the horn (which is increasingly sold at a price per kilogramme rather than a price per horn).

However, strong antipoaching efforts to maintain the risk to the poacher is essential, since if the risk he faces

is low then he will accept a reduced reward, therefore he will still poach dehorned rhinos. A lack of antipoaching human resources in Hwange National Park in the early 1990s was the reason why many rhinos were killed there despite extensive dehorning.

The circumstances when and how dehorning should be used as a tool for reducing the threat from poaching.



Source: EWT, Report on impacts of dehorning - www.ewt.org.za.

For rhinos that are not dehorned:

X = Total mortality rate =
Poaching rate (shootings not snaring which would be non-selective)
+ Fighting mortality rate
+ Calf mortality rate

For rhinos that are dehorned:

Y = Total mortality rate =
Poaching rate (shootings not snaring which would be non-selective)
+ Fighting mortality rate
+ Calf mortality rate
+ Darting mortality rate
+ Abortion rate due to darting

If Y is less than X, then dehorning is effective as a conservation measure.

Can we say if dehorning is effective in reducing rhino mortality? The following variables are relevant and, from the experience in the Zimbabwean Lowveld conservancies, some quantification of these variables can be attempted.

Putting values into these equations, from experience in Lowveld conservancies (Bubiana, Save Valley, Chiredzi River and Bubye Valley) over recent years, varying results emerge and clearly reflect that the effectiveness of dehorning depends upon the level of concurrent antipoaching efforts. These efforts have varied considerably from one conservancy to another.

For instance, security was very weak in Bubiana conservancy, where perimeter fences were destroyed during land invasions and where staff corruption was a significant factor, whereas the adjacent Bubye Valley Conservancy retained intact fences and mounted a stronger antipoaching effort. Because of this variability, it is not appropriate to lump the data from all areas.

In Bubiana Conservancy, until the rhinos were either all poached or translocated to Bubye Valley, the average annual poaching rate of dehorned rhinos was ten times higher at 0,244 (24%).

It has been suggested that rhino bulls will be severely disadvantaged in fights with horned bulls and they will be displaced from their home ranges. An analysis of the average distance that 30 dehorned black rhino bulls were seen (during regular monitoring patrols) from the position at which they were dehorned showed that this distance (3,3km) was no greater than the average distance between sightings of a horned bull in the same population (an equal-sized sample of 30 horned bulls was used in this comparison). Hence there is no indication that dehorned bulls are displaced from their home ranges.

The social interactions of rhinos are more complex and more long-term than is appreciated by those who view rhinos simplistically as solitary, highly aggressive animals that fight a lot and need intact horns to do so.

Another suggestion is that dehorned rhinos will have a higher rate of calf mortality than horned rhinos, primarily owing to a reduced ability to defend their calves against predators. However, the average intercalving interval for a sample of 23 dehorned black rhino cows in

Example of dehorning experience in Bubye Valley Conservancy (January 2007 to December 2012)

This area had an average annual population size of 199 rhinos (mainly black) over this period. Each year, an average of 13% of these had horn stubs from dehorning either in that year or the previous year, rather than intact or substantially regrown horns. The following average annual rates pertained over this six-year period. This quantification is in terms of proportions of population per year, e.g. if ten rhinos were poached within a population of hundred, then the rate of poaching in that year would be 0,1.

RHINOS WITH HORNS		DEHORNED RHINOS	
Poaching rate (shootings)	0,051	Poaching rate (shootings)	0,024
Fighting mortality rate	0,008	Fighting mortality rate	0,009
Calf mortality rate	0,001	Calf mortality rate	0
		Darting mortality rate	0,002
		Darting abortion rate (guess)	0,001
X =	0,06	Y =	0,036

Since X>Y, we can conclude that dehorning was effective in this particular situation.


Photo courtesy Lowveld Rhino Trust.

Lowveld conservancies (which contain substantial densities of lions and hyenas) was found to be 2,6 years, which is below the SADC regional average, and overall population growth rates have consistently been over 7% per annum. Therefore it appears that dehorning has not had an adverse effect on population growth in these populations.

In general, therefore, the Zimbabwean experience suggests that dehorning can be effective in reducing poaching of rhinos provided that antipoaching efforts are maintained, and also suggests that behavioural and ecological effects arising from dehorning are not significant.

However, some caveats need to be stated with regard to this conclusion:

- The rhinos in these analyses are mostly black rhinos hence the influence of factors such as intraspecies fighting may be different for populations that are comprised mainly or entirely of white rhinos.
- These populations are in large areas (density of about one rhino per 1 500 hectares) and compression effects in smaller areas such as game farms may well increase intraspecies fighting.
- This fighting risk is increased where there are social disruptions owing to rhinos being safari-hunted and then replaced by translocated rhinos that are strangers in that population.

Thus further investigations of dehorning effects on higher-density populations in smaller areas, especially white rhinos, would be desirable.

A further factor to be considered in comparing the Zimbabwean situation with the South African one is that no horns are retained in private stockpiles in Zimbabwe. If rhino owners in South Africa feel that legal horn trade is likely to ensue, despite the improbability that a potential trading partner such as Vietnam or China would wish to be scrutinised as such under the CITES system, then the retention of private horn stocks adds an economic motivation for dehorning on game farms and is an added incentive for the owners to beef up their rhino antipoaching security measures.

LOWVELD RHINO TRUST

The Lowveld Rhino Trust (LRT) undertakes rhino conservation activities in the Lowveld region of Zimbabwe, with a concentration of effort in Save Valley Conservancy and Bubye Valley Conservancy.

These activities help to maintain an enabling environment (in terms of habitat conservation under wildlife-based land-use, stakeholder attitudes, national policies, etc.) for the long-term growth of populations of both species of rhinos, while also tackling immediate conservation needs (monitoring, management, protection and community awareness).

The programme of rhino conservation in the Lowveld built up the black rhino population in that region from 4% of the national total in 1990 to 88% at the end of 2012 (about 7% of the continental total). This has been achieved mainly through biological management, strategic translocations of rhinos, support for antipoaching, informer systems, legal actions against poachers, etc.

Much credit for this effort is owed to conservancy members and their staff, operating under difficult economic and political conditions. Unplanned settlement under Zimbabwe's "fast-track" resettlement programme has resulted in a significant loss of rhino habitat in the conservancies, but nonetheless the available range remains sufficient to carry more than twice the current populations of both rhino species.

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www.lowveldrhinotrust.co.za

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