

in which they can breed up quickly. This is being done by forming partnerships with landowners within the historic range of the black rhino but outside formal protected areas. Mun-ya-Wana Game Reserve consists of almost 20,000 hectares of barrier-free habitat, the result of internal fences having been dropped between Conservation Corporation Africa's Phinda Reserve and three of its neighbours (Zuka, Bumbeni and Phumalanga).

'We're thrilled to have found a large new area for black rhinos, which have been bumping up against the edges of the formal protected areas of the province,' says WWF's project leader Dr Jacques Flamand. 'This is a historic partnership between the state and private sectors in KwaZulu-Natal, which sets the tone for future cooperation.'

The animals on Mun-ya-Wana Game Reserve form the core of what is hoped will become a significant new black rhino population.

'The releases went better than we could have hoped,' said Dr Flamand. 'There is always the risk

that further down the line there might still be conflict between some of the animals, but so far we have been delighted with how they have settled.'

Because of the feisty nature of black rhinos, releasing them onto new land always carries risk so efforts were made to reduce the likelihood of conflict between them. All of the animals were released during a three-day period, ensuring that they were all newcomers simultaneously. Animals in neighbouring bomas were released at neighbouring sites in the field. Dung from each animal was spread around its allotted release site to make it feel more familiar in the hopes that it would settle more quickly. The largest and most dangerous bulls were sited at extreme ends of the reserve in the hope of minimizing aggressive contacts.

Each animal had a radio transmitter implanted in its horn to allow intensive monitoring. This helps understand the existing population and will also provide invaluable information for the release of the next founder population.

Transfer of Swaziland's southern white rhino from CITES Appendix I to Appendix II

Ted Reilly,¹ Mick Reilly^{2} and Richard H. Emslie³*

¹ Chief Executive, Big Game Parks of Swaziland

² Head, Conservation and Security, Big Game Parks of Swaziland

* corresponding author; email: conservationhq@biggameparks.org

³ Scientific Officer, IUCN SSC African Rhino Specialist Group

The Kingdom of Swaziland's Big Game Parks not only subscribe to the sustainable use of their renewable natural resources but indeed depend upon it. The kingdom's wildlife depends on the revenues its parks generate for its survival. The Big Game Parks, which manage all of Swaziland's black and white rhinos, have had to become self-sustaining without tax support, and miraculously we have achieved this. This has been possible only because of dedicated staff and the unfailing moral support of the head of state.

The rhino reproduction strategy is exactly in line with the strategy developed by the SADC Rhino Management Group (RMG) and endorsed by IUCN's Af-

rican Rhino Specialist Group (AfRSG). Swaziland is committed to promoting maximum reproduction of the species to increase its rhino numbers as rapidly as possible.

Swaziland believes a usable surplus of rhinos will encourage increased investment in propagating the species. It will encourage land owners to open additional range, which would be good news for rhino conservation. The South African experience is a supporting example. A direct consequence of such a scenario would be to expand the tourism potential, thus providing job opportunities.

Law enforcement

The southern white rhino became extinct in Swaziland before the turn of the last century. The subspecies was reintroduced in the mid-1960s from South Africa.

After a period of excellent population growth the rhino population was massively reduced due to commercial poaching between 1988 and 1992. While southern white rhinos became extinct for a second time in some countries, Swaziland successfully addressed the poaching problem. Legislative changes made are widely considered to be some of the toughest in existence for protecting wildlife. Swaziland's legislation and effective anti-poaching measures in the field have not gone unnoticed by the traffickers, and we have it on good intelligence that some traffickers avoid Swaziland as a result.

With committed and diligent field anti-poaching efforts and cooperative regional law enforcement, Swaziland has been able to turn things around. We have not lost a single rhino to poaching in 12 years.

Recent recovery and importance of growth

We have also improved our biological management by actively reducing the density of some competing grazers, thus creating more favourable conditions for white rhinos. The collective results of all these efforts is that Swazi's population of white rhinos has rebounded from a low of 27 animals to the present 61 animals in just 10 years.

Swaziland's two white rhino populations have increased to the level that both now qualify to be rated by IUCN's African Rhino Specialist Group as *Continentially Important*. Taking into account removals, the underlying growth rate is calculated at 9.4% per annum. This is well above the continental minimum target of 5% recommended by AFRSG. Swaziland fully supports this target, because experience has shown that failure to achieve this level of growth, if even for a few years, can result in significantly fewer numbers of rhinos in future. Suboptimal biological management is similar to poaching—one ends up with fewer rhinos.

Take Swaziland's 61 white rhinos as an example. If we achieve only a suboptimal growth rate of 3%, in 10 years the net gain will be only 20 rhinos. However, if we can maintain a rapid growth rate of 8%, then numbers will more than double with a net growth of 71 rhinos (50 more rhinos in just 10 years). This

highlights the critical importance of rapid growth.

Geneticists also advise that maintaining rapid population growth helps minimize loss of genetic diversity.

How to achieve and maintain good growth

Achieving and maintaining a high metapopulation growth rate can be done only if the land is not overstocked with rhinos and other competing herbivores. This is achieved by translocating surplus animals to maintain the density of rhino populations at productive levels.

There are signs that the present high density may be affecting our two populations negatively, and that therefore we should increase the number of removals from our two populations to keep them productive. First, mortality rates due to bull aggression have increased from 1.7% (1992–1997) to 4.2% (1998–2003). Second, while our underlying growth rates are still high, they have declined from an estimated 10.8% (1993–1997) to 8.4% (1997–2003).

We need to be proactive and increase removals from the inhabited range to prevent the inevitable decline in growth that will occur if densities build up. Swaziland has based its proposed safe minimum and maximum offtake levels on the harvesting strategy for maximizing growth recommended by the IUCN AfRSG and the SADC Rhino Management Group.

This strategy is based on original work on population dynamics by the late Grahame Caughley (1977), reinforced by modelling of rhino population dynamics by Peter Goodman (2001, 2002) and John Hearne. The basic principle is that the population density of rhinos harvested at a fixed annual percentage will eventually adjust and stabilize at a level that can be sustained if it does not exceed the maximum possible rate of reproduction that the species can sustain in the long term. This rate is around 9% for an established population of rhinos without a skewed sex ratio. Importantly, much evidence from the field supports this harvesting theory.

It may seem counter-intuitive, but conservative low levels of removal are not actually 'safe', but rather will ultimately lead to low population growth and hence significantly fewer numbers of rhinos. This is obviously highly undesirable.

The key lesson is that to get long-term growth of at least 5%, an average of at least 5% of the popula-

tion should be removed annually. This percentage is a safe minimum and will prevent under-harvesting. As a precaution, both AfRSG and SADC RMG have recommended that the maximum offtake of rhinos not exceed 8% per annum, and Swaziland subscribes to this recommendation.

Harvesting a set percentage requires accurate population estimates, which we have, as Swaziland's rhino populations are intensively monitored to fulfil security, anti-poaching and biological requirements. Designated field rangers actively track down every rhino every day, and all sightings are reported and recorded. The fact that we manage to see every single rhino on most days makes our monitoring among the most intensive in Africa.

The proposed harvesting levels are in line with recommended best practice and have built-in safeguards to prevent under- and overharvesting—both of which would reduce population growth rates (fig. 1).

Following a period of growth, population sizes eventually stabilize at levels that can sustain the specific levels of set percentage harvesting. For example, by harvesting at 6%, the model in figure 1 indicates numbers would eventually stabilize at around 85% of the ecological carrying capacity. The lower the set percentage offtake per year, the nearer the eventual rhino density will be to ecological carrying capacity.

Most importantly, experience from the field supports the theory. Populations in a number of range states have been harvested at conservative, low levels (0–3% per annum). Given good protection, these populations have invariably shown an initial period of rapid growth, followed by a marked levelling off in growth, and sometimes even a decline in numbers, as populations have approached, reached or exceeded estimated ecological carrying capacity. The eventual

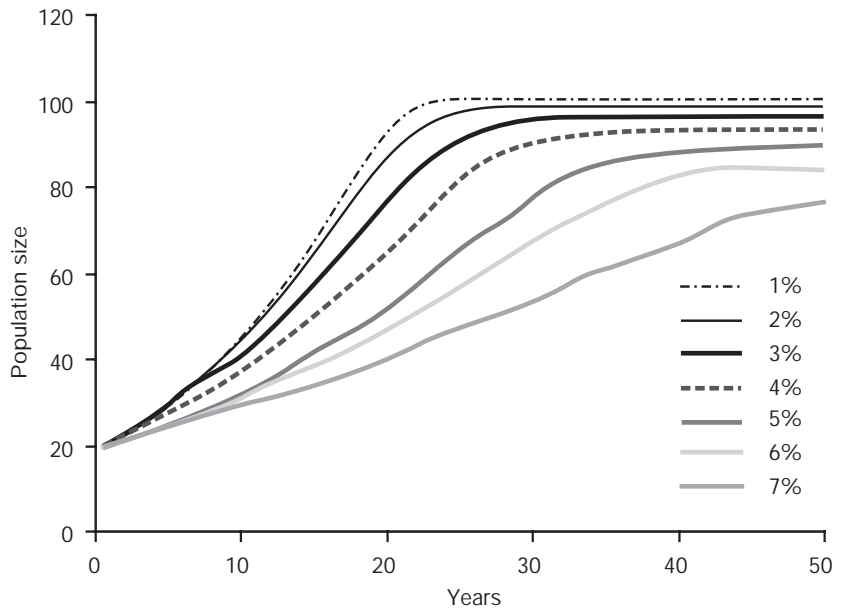


Figure 1. Modelled trends in numbers in rhino populations harvested at different set percentages per annum (from 1% to 7%), starting with 20 rhinos and ecological carrying capacity set at 100 (with acknowledgements to Peter Goodman and John Hearne, who did the modelling).

falling off in population performance in populations harvested at 0–3% per annum (such as the two in fig. 2) is as expected by the theory.

The effect of the CITES listing

Swaziland faced a difficulty. South Africa downlisted its rhino population to Appendix II in 1994. With our continued Appendix I listing, we were prevented from selling white rhinos to South Africa—the country that currently has the greatest potential for taking additional rhinos. This was because under CITES rules any sales to South Africa are deemed to be for primary commercial purposes (as the South African rhino market is commercially driven). South Africa accordingly denied Swaziland CITES import permits, reducing Swazi ability to fully integrate and manage its populations as part of a bigger regional metapopulation. South Africa, however, recognizes the conservation merit of the Swaziland proposal, and the South African delegation at CoP 13 supported our proposed annotated downlisting, as this would allow South Africa to issue CITES import permits for southern white rhinos from Swaziland.

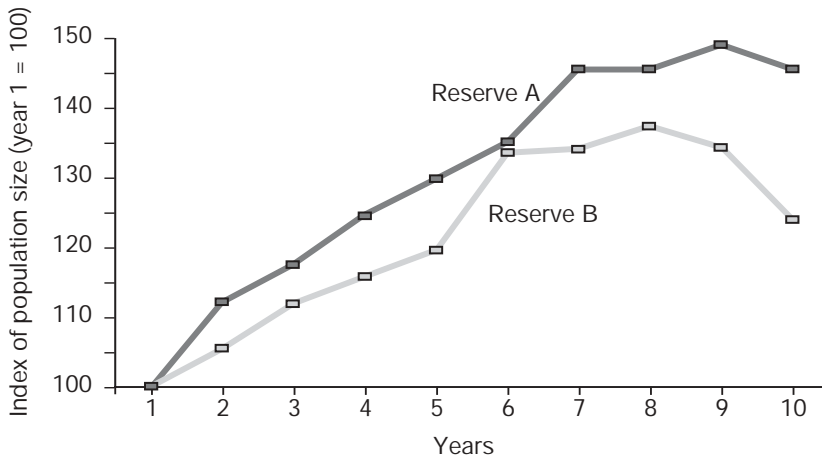


Figure 2. Trends in numbers in two major black rhino donor populations where offtake levels were conservative in the past. The conservation agency managing these populations has since incorporated set percentage harvesting into its management policy, with a minimum offtake of 5% and maximum of 8%, in an attempt to return these populations to productive levels.

Recommendations

After discussion with other delegations to CoP 13, and in particular with those from other African rhino range states and the European Union (EU), Swaziland sought to amend the annotation to its proposal to downlist its white rhinos from Appendix I to Appendix II, as follows:

- Swaziland’s annual harvest and export of live white rhinos to appropriate and acceptable destinations will be limited to an upper safe limit of 7% of the population. Such offtake will go to national parks, game reserves, game farms and other conservation projects. Most of the animals should go to southern Africa and remain part of the managed metapopulation. There would also be an exchange of animals for genetic management,
- Only post-reproductive males or identified problem animals¹ will be exported as trophies, but not more than 1% of the population will be exported annually for this purpose, and then only if the live removal option is not practical.
- All exported specimens will be marked with microchips.

¹ An especially aggressive male that has killed cows or calves is an example of a problem animal. It should not be translocated. Our intensive monitoring enables Swaziland to be entirely confident that post-reproductive and problem animals can be positively identified.

For Swaziland, however, trophy hunting is a management option less preferred than live removals.

Swazi rhinos as part of a regional metapopulation

We contend that for a number of reasons, it is logical for the Swaziland population to be managed as part of a larger southern African metapopulation. In the past, Swazi white rhinos have been managed on this basis.

- Swaziland’s populations are within 80 km of some South African populations, while many South African populations are separated by much greater distances.
 - In spite of our need to increase removals from our populations to maintain rapid growth, we have recently imported two white rhino females from South Africa for genetic conservation.
 - In the past two white rhinos were given to South Africa’s Kruger National Park. When we were still able to do so, we sold white rhinos to South Africa. We have also done rhino exchanges with South Africa and Zimbabwe.
- Swaziland pointed out that these translocations, both into and out of the country, adequately demonstrated that this population is part of the larger southern African white rhino metapopulation. Furthermore, this population was originally reintroduced from South Africa in the 1960s. Good cooperation in wildlife law enforcement exists between Swaziland and its neighbours, South Africa in particular, with whom Swaziland shares this metapopulation of southern white rhinos.

Split listing and trophy hunting

Swaziland also pointed out that for this species, precedents have already been set of split listing (being listed in both Appendix I and Appendix II) and tro-

phy hunting, and no detrimental effects have been experienced as a result. Since South Africa's downlisting to Appendix II, the South African population of southern white rhino has increased by almost 50%. Since hunting of southern white rhinos started in 1968, rhino numbers have increased over sixfold, indicating that limited hunting has clearly been sustainable. Thus experience indicates that the annotated downlisting proposed by Swaziland will not lead to increased illegal demand for rhino horn and a resultant increase in poaching.

Furthermore, southern white rhinos are no longer listed in any of the IUCN Red List Threatened categories but are instead classified as *Near Threatened*.

Non-detriment finding

A recognized rhino expert was commissioned by the management authority to conduct an assessment of the effects of this proposal if implemented. This expert found that implementing it would create positive incentives for rhino conservation (Adcock 2004).

The importance of creating an economic climate conducive to private sector participation was identified, given the massive contribution that the private sector has made to South Africa's white rhino population and the resultant benefits this has generated for formal conservation areas.

National and legislative compliance with CITES

Swaziland has been placed in Category 3 of the CITES National Legislation Project, and Swaziland's chief justice has undertaken steps with the United Nations Environmental Law Branch to address this situation. Swazi legislation adequately protects all species listed in the schedules of the Game Act, which is the principal legislation protecting wild animals and particularly rhinos. The process of making the legislation compliant with CITES is already under way.

In the meantime, rhinos remain extremely well protected under Swazi legislation. Rhino poaching carries a mandatory minimum jail term of five years without the option of a fine. In addition, failure to replace the rhinos poached will result in an additional mandatory two-year jail term. Trafficking rhino products is an even more serious offence, attracting a mandatory minimum seven-year sentence. The Game Act prohibits suspension of any part of any sentence.

Perspective

It was stressed that Swaziland's proposal be considered in the correct perspective.

- Swaziland at 17,000 km² is one of Africa's smallest countries, substantially smaller even than South Africa's Kruger National Park. Consequently, rhino and wildlife populations in Swazi parks are small and therefore require intensive and expensive pre-emptive management.
- Traded rhinos will benefit those that remain.
- Due to financial constraints, Swaziland's rhino parks are only partially fenced, limiting the safe range available. Revenues derived from traded rhinos will go a long way towards allowing us to increase the size of our fenced rhino sanctuaries, thereby securing additional range for populations to grow into.
- Appendix I listing has proved to be highly damaging in terms of mortality to this population, as outlined in the proposal.
- Retention of this population in Appendix I is counterproductive to the greater conservation goals of this species in Swaziland and the wider metapopulation.
- Swaziland has demonstrated that this population does not meet the criteria for Appendix I listing.
- Africa's parks and the animals that inhabit them must continue to demonstrate that they are national assets rather than national liabilities that drain taxpayers' money. In the face of fierce demand for alternative, economically driven land uses, it must be demonstrated that conservation is an economically valid form of land use. Doing so will secure its place in the future and help ensure political support in the long term.
- Importantly, this proposal is based on good science, with theory supported in practice.

Negotiations and voting

Initially, Swaziland was put under pressure to apply absolute numbers to its proposed removal of rhinos. During negotiations with the EU, Swaziland pointed out that it intended managing its populations for maximum growth and that a fixed-number removal would quickly become obsolete with a growing population and would require bringing another proposal to a future CoP to adjust this number. Using an offtake figure based on harvesting by set percentage rather than a fixed absolute annual offtake allows for flexibility in adjusting to

changing ecological carrying capacity. After enlisting the expert scientific advice of Dr Richard Emslie of AfRSG (who compiled the proceedings of a SADC RMG workshop, 'Biological Management to Meet Continental and National Black Rhino Conservation Goals'), it was agreed to integrate the principles of the set percentage harvesting strategy into the annotation. An information document was generated that covered metapopulation management and harvesting white rhinos for maximum growth and was circulated to all parties. This can be viewed online (www.biggameparks.org).

Due to administrative misunderstandings, the proposed annotations were included with the information document, and the document was circulated only in English, and not translated into the other working languages of the convention, French and Spanish. In addition, the language used in the proposed annotations needed to be adjusted to conform with that used in the convention. The chair of Committee I at CITES CoP 13 drew attention to these issues. Time constraints precluded the opportunity to reproduce the proposed revised amendments in all the working languages. The chair therefore proposed that the annotations in the original proposal be put to the vote, but on the basis that Swaziland undertakes to implement harvesting its rhinos in accordance with the proposed amended annotations agreed with the EU, and that the minutes of the proceedings reflect this. This was accepted by all parties after Swaziland indicated that this was acceptable, and the EU indicated that it was prepared to accept Swaziland's promise to implement the annotations as modified.

The annotated proposal that was voted on stood as follows:

- The Swaziland population of the southern white rhino (*Ceratotherium simum simum*) be downlisted from Appendix I to Appendix II to allow international trade in live animals to appropriate and acceptable destinations, and to allow limited trophy hunting.
- All other specimens shall be deemed to be specimens of species included in Appendix I and trade in them shall be regulated accordingly.

While the Swaziland proposal was supported by SADC range states (including South Africa) and the EU, there were a few objections from the floor.

Kenya objected to the proposal on the grounds that Swaziland's national legislation is not generally compliant with that of the convention (Category 3), and because the population of white rhinos in Swaziland is small.

Israel also contended that the Swaziland population was small and that on genetic grounds, the Swazi proposal was not based on good science and should be rejected.

We feel that this argument misses a number of key points. First, Swaziland's 61 white rhinos are in fact being managed as part of a much larger metapopulation with new blood having been recently introduced for genetic conservation, as recommended by geneticists. Second, conservation biologists have advised that to minimize loss of genetic heterozygosity one should seek to maintain rapid population growth rates. Preventing Swaziland from exporting surplus rhinos (as proposed by Israel) would lead to a build-up of numbers in Swazi parks and inevitably reduced growth rates, which would negatively affect genetic diversity. Third, as mentioned earlier, the generation of additional revenue from live sales would allow us to increase the area of fenced and safe rhino range in Swaziland, enabling us to increase the number of rhinos. Fourth, Franklin (1980) and Soulé (1980) estimated that the minimum effective population size (n_e) for the long-term conservation of metapopulation genetic viability is 500 (Franklin 1980; Soulé 1980) and that below this number it is likely that genetic variance for complex traits will be lost at a significantly faster rate than it can be replaced by mutations. An n_e of 500 is equivalent to at least 2000 and more probably around 5000 rhinos (Peter Goodman pers. comm.).

Lande (1998) has argued that desirable minimum effective population size may be as much as 10 times higher. A recent paper by Reed et al. (2003) also recommended, based on extensive modelling, that conservation programmes for wild populations of vertebrates need to be designed to conserve approximately 6000–7000 adults to ensure long-term persistence. It is not possible for Swaziland to conserve such large numbers of white rhinos on its own. Therefore, to contribute to the goal of achieving long-term genetic viability, Swaziland simply has no option but to manage its small number of rhinos as part of a bigger metapopulation. Our proposal is designed to facilitate this.

Finally, Swaziland's white rhinos are all ultimately descended from the same original Umfolozi founder stock, as are all other white rhinos in the southern African metapopulation. There is therefore no compelling reason to conserve Swazi animals in isolation from those in the rest of the region.

For all the above reasons, we contend that the fact Swaziland has only 61 white rhinos does not repre-

sent a valid reason for rejecting our proposal. As we have explained, our proposal was based on recommended best practices for metapopulation management of rhino as advocated by the IUCN SSC AFRSG. Instead of our proposal being based on bad science, it is rather Israel's objection to our proposal that demonstrates a lack of appreciation of the principles of managing a rhino metapopulation for growth and long-term conservation of genetic viability, on which our proposal is based.

It must also be remembered that the entire worldwide population of southern white rhinos—now over 12,000 animals—has grown in just over a century from only 20 to 50 animals (Emslie and Brooks 2002), a number that is approximately half of Swaziland's current population. This widely acclaimed conservation success story could not have been achieved had it not been for innovative management, including translocations, removals, metapopulation management, trophy hunting and private ownership. Swaziland's proposal is simply following tried and tested approaches.

The proposal was put to a vote; results were 88 in favour, 15 opposed and 21 abstaining. The required two-thirds majority being more than obtained, the proposal was accepted. The proposal and all documentation can be viewed on www.biggameparks.org.

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CITES Rhino Resolution 9.14(rev)

Richard H. Emslie

IUCN SSC African Rhino Specialist Group; email: remslie@kznwildlife.com

At the recent 13th CITES Conference of the Parties (CoP13) in Bangkok, CITES Rhino Resolution 9.14(rev) was retained and revised, transferring reporting responsibility to IUCN SSC's African and Asian Rhino Specialist Groups.

The CITES Secretariat introduced a document that drew attention to the requirement for reporting to it.

Reports were required at least six months prior to a CoP detailing the following:

- the status of captive and wild rhinoceros populations
- a summary of incidents of illegal hunting
- a summary of incidents of illegal trade in rhinoceros parts and derivatives
- the status, type and frequency of law-enforcement