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GOVERNMENT NOTICE

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

No. 49

25 January 2013

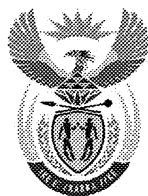
NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT NO. 10 OF 2004)

BIODIVERSITY MANAGEMENT PLAN FOR THE BLACK RHINOCEROS (*DICEROS BICORNIS*) IN SOUTH AFRICA 2011-2020

I, Bomo Edith Edna Molewa, Minister of Water and Environmental Affairs acting under section 43(1)(b), read with section 43(3) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), hereby publish the Biodiversity Management Plan for the Black Rhinoceros (*Diceros bicornis*) in South Africa for 2011-2020, as contained in the Schedule hereto.



BOMO EDITH EDNA MOLEWA
MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

SCHEDULE

BIODIVERSITY MANAGEMENT PLAN FOR THE BLACK RHINOCEROS (*Diceros bicornis*) IN SOUTH AFRICA 2011-2020 (2011)

**Jointly developed by South African members of the
SADC Rhino Management Group (RMG)**

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EXECUTIVE SUMMARY

The African black rhino, *Diceros bicornis* is listed internationally by the IUCN as *Critically Endangered* and as an endangered species under the national TOPS regulations. Primarily as a result of heavy commercial poaching of the animal for its horn as well as through habitat loss, the continental population crashed from around 65000 in 1970 to 2,410 in 1995. Through strict conservation programmes, the numbers in Africa have since increased, reaching 4,880 by the beginning of 2011 (Figure. 1).

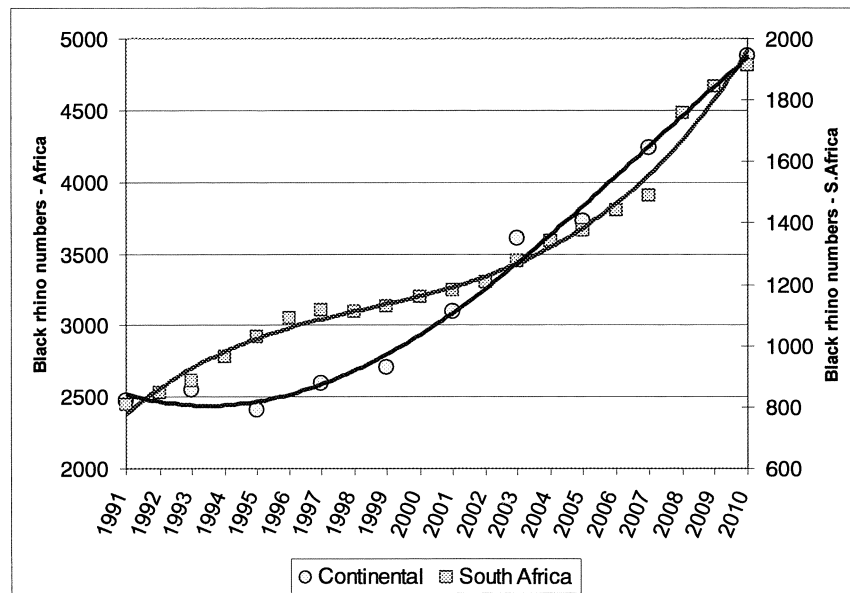


Figure 1: Trends in black rhino numbers since 1991 in Africa and in South Africa

South Africa's role in black rhino conservation was initially relatively small, increasing substantially more recently. The national population was reduced to about 110 animals in 1935, or less than 0.1% of the continent's population. By the beginning of 2011 the South African population had increased to 1,915 animals (approximately 39% of the African estimate). This increase in the South African contribution was largely a result of successful conservation measures, and the declining populations in many other African range states. The jump in numbers in 2008 is due to improved population estimation in the largest population and the use of more conservative estimates for this population previously.

Two of the now three extant ecotypes of black rhinos occur in South Africa, namely the southern central *D. b. minor* and the south-western *D. b. bicornis* black rhino. South Africa (and to a much lesser extent Zimbabwe) are the remaining main strongholds of the *D. b. minor*, with South Africa conserving 1,684 or 76% of this subspecies in the wild in 2010. South Africa also currently conserves the only populations of *D. b. bicornis* outside Namibia (8.9% of the subspecies total), as well as having a single population of the "out-of-range" eastern black rhino (*D. b. michaeli*), indigenous to East Africa (8.1% of the subspecies total)

By 2011 South Africa conserved three of Africa's seven IUCN SSC AfRSG rated **Key**1 black rhino populations of continental significance. and 42% of the other rated **Key** (3/10) and **Important** (12/26) populations. South Africa's black rhino conservation effort, is therefore of continental importance. South Africa has justly been recognised as a world leader in rhino conservation, and has an important role to play in conserving both the black and white rhino for future generations.

The current plan is a third revised edition following the first and second editions that were drafted in 1989 and 1997, respectively. This version of the plan is drafted in accordance with national regulations for

species biodiversity management plans (see Section 43 (1)(b) and (c) of NEMBA). The plan was jointly developed by South African members of the SADC Rhino Management Group (RMG).

The plan has a **Vision, Long- & Short-term Goals**, under which are **Objectives**, with their **Actions** and **Indicators**.

The **Long-term Vision** for the South Africa black rhino population is to:

'Contribute to the recovery and long-term persistence of the global black rhino population by having viable populations of the indigenous subspecies in natural habitat throughout their former range within South Africa and managed as part of a regional meta-population.'

With a meta-population goal of:

'Having at least 3,000 *D. b. minor* and 500 *D. b. bicornis* in South Africa, with at least four *D. b. minor* populations greater than 100 and another 10 greater than 50; and at least one *D. b. bicornis* population greater than a 100 and one greater than 50.'¹

The **Short-term (10 year) Conservation Goal** will attempt to achieve the following population targets of:

- **An average South African meta-population growth rate for both of the two indigenous subspecies of black rhino of at least 5% per annum, and**
- **Meta-population sizes in South Africa of at least 2,800 for *D. b. minor* and 260 for *D. b. bicornis* by the end of 2020**

These will be achieved via the following six **Key Components**

- **Biological Management** will endeavour to achieve sustainable meta-population growth through a harvesting regime of 5% per annum where required; maintenance of a genetically diverse population, establishment of new populations, and management of surplus males via various means, inclusive of limited and regulated hunting of bulls.
- **Population monitoring** will be employed to provide accurate and precise information on black rhino populations to allow management to make informed decisions.
- **Protection** remains a key activity to minimize losses of rhinos from illegal activities and will be achieved through effective law enforcement, improved neighbour relations, effective criminal investigations and prosecutions, and securing and monitoring rhino horn stockpiles.
- **Coordination of conservation management** of black rhino populations through the re-formalization of the South African Rhino Management Group (RMG) (see Appendix 1) and development and implementation of rhino conservation plans by all conservation and private owners with black rhinos.
- **Human Resources** will be assessed and developed to provide the required skills to protect and manage black rhinos.

¹ No population target has been provided for the single *D. b. michaeli* population in South Africa given its extra-limital status. The population should ideally be repatriated to its former range. However, given its Key2 rating by the AfRSG, it remains an important population for the survival of the rarest black rhino subspecies at the continental level. While the population resides in South Africa, every attempt should be made to keep this population productive with a net growth of at least 5% per annum, taking into consideration the habitat limitations of its current area. In addition, the population should not be allowed to expand its current range of ownership.

- **Economic & social sustainability** of the programme also needs to be addressed to ensure political and social support for rhino conservation efforts.

The plan also lists a number of **Indicators** that can be used to assess progress towards meeting the Conservation Goals

Please note, the plan does not seek to set out a detailed Action Plan as this is best done annually by each management authority. Rather it provides strategic direction and guidance based on lessons learned and recommended best practices.

GLOSSARY OF TERMS

Biodiversity Management Plan for Species or Conservation plan: - A tool to guide the management of indigenous species (and any sub-specific taxa) and groupings of indigenous species that are adversely affected by similar threats and enables the evaluation of progress with regard to such management

The IUCN Red List of Threatened Species:- (also known as the **IUCN Red List** or **Red Data List**), is a comprehensive inventory of the global conservation status of plant and animal species which provides taxonomic, conservation status and distribution information on plants and animals that have been globally evaluated using the IUCN Red List Categories and Criteria. This system is designed to determine the relative risk of extinction, and the main purpose of the IUCN Red List is to catalogue and highlight those plants and animals that are facing a higher risk of global extinction (i.e. those listed as **Critically Endangered**, **Endangered** and **Vulnerable**) as well as to examine trends in numbers and status of listed threatened species over time.

Species: - NEMBA defines a species as a kind of animal, plant or other organism that does not normally interbreed with individuals of another kind, and includes any sub-species, cultivar, variety, geographic race, strain, hybrid or geographically separate population. This definition applies in this document.

Subspecies:- Any natural subdivision of a species that exhibits small, but persistent, morphological variations from other subdivisions of the same species living in different geographical regions or times, but which are likely to interbreed and produce viable offspring if put together with another subspecies of the same species.

Meta-population: - consists of a group of spatially separated populations of the same species which interact at some level (Levins R. 1969. Some demographic and genetic consequences of environmental heterogeneity for biological control. *Bulletin of the Entomological Society of America* 15: 237–240). Rhino metapopulations can be actively managed using translocation of animals between sub-populations.

Native Species/Indigenous species:- A species is defined as **indigenous** or **native** to a given region or ecosystem, if its presence in that region is the result of only natural resources, with no human intervention. NEMBA defines an indigenous species as a species that occurs, or has historically occurred, naturally in a free state in nature within the borders of the Republic, but excludes a species that has been introduced in the Republic as a result of human activity. It thus excludes agricultural and domesticated livestock and plants

Ecotype: A subdivision of a species consisting of a population that is adapted to a particular set of environmental conditions.

ACRONYMS

AfRSG:	African Rhino Specialist Group of the SSC of IUCN
BRREP:	Black Rhino Range Expansion Programme
CBD:	Convention on Biological Diversity
CITES:	Convention in Trade in Endangered Species
COP:	Conference of Parties
DEA:	Department of Environmental Affairs
DWA:	Department of Water Affairs
ECC	Ecological carrying capacity
IUCN:	International Union for Conservation of Nature
NEMBA:	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
SADC:	Southern African Development Community
SADC RMG:	SADC Rhino Management Group (see Appendix 1 for details)
SADC RPRC:	SADC Regional Programme for Rhino Conservation (not currently operational)
SADC RRG:	SADC Rhino Recovery Group (not currently operational)
SANParks:	South African National Parks
SSC:	Species Survival Commission (of the IUCN)
ToPS:	Threatened or Protected Species (commonly refers to the regulations issued in terms of NEMBA)
ECWG:	Environmental Crime Working Group of Interpol which is now formally linked with the RESG
RESG:	Rhino & Elephant Security Group which is now formally linked with the Interpol ECWG.

ACKNOWLEDGEMENTS

- Rob Brett is thanked for facilitating the 2003 SADC RMG workshop session to develop the original 3rd edition of this plan building upon a straw-dog draft prepared by Richard Emslie and Martin Brooks which incorporated comments from South African RMG members on an earlier draft. The SADC Regional Programme for Rhino Conservation is thanked for sponsoring the holding of the meeting at which the workshop session was held. Following the workshop Richard Emslie compiled the original 3rd edition of this plan. This edition of the plan is a revised and updated version.
- Richard Emslie would like to thank core sponsors of the AfRSG Scientific Officer in 2007, namely Save the Rhino International, The International Rhino Foundation, EAZA Rhino Campaign and WWF African Rhino Programme (with funding from WWF Netherlands) for providing the funds which enabled him to compile and update this revised edition of the Plan as well as chair the RMG Working Group which developed the revised system for assessing and allocating black rhino hunting permits. WWF ARP funded the 2008 revision of the document.
- This plan has been jointly developed by members of the South African Rhino Management Group a has benefited from comments on drafts by Martin Brooks, Rob Brett, Richard Emslie, Mike Knight, Peter Lloyd, Pierre Nel, Pieter Nel, Johan Eksteen, Julius Koen, Johan Kruger, Brad Fike, Keryn Adcock, Tony Conway, Caiphus Khumalo and Dave Balfour.
- Thanks are extended to the following sponsors:

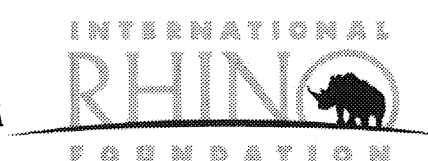
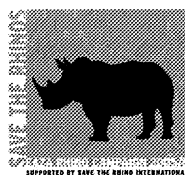


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1. INTRODUCTION

Rhinoceroses, commonly known as rhino, belong to one of the few remaining categories of mega-fauna surviving today. The black (*Diceros bicornis*) and the white rhino (*Ceratotherium simum*) are native to Africa with the white rhino being the second largest land mammal weighing up to 2,700 kg. Asia conserves another three surviving species of rhino. The black rhino has seen one of the most drastic declines of African large mammals because of poaching and habitat loss. But due to conservation efforts (protection and biological management) numbers are slowly rising. However, tremendous effort is still needed to secure the future for the black rhino. There are now only three surviving recognised subspecies of black rhino, with the West African Black Rhino (*Diceros bicornis longipes*) recently being declared extinct.

1.1 Why the Black Rhinoceros (*Diceros bicornis*) requires a Biodiversity Management Plan

The black rhino is listed under the international IUCN Red List as Threatened - Critically Endangered (IUCN SSC Red List 2011), while locally Friedmann & Daly (2004) considered the *D.b bicornis* and *D.b minor* subspecies/ecotypes to be Critically Endangered and Vulnerable, respectively. Black rhinos (with no subspecies distinction) are listed as an endangered species according to the South African List of Threatened or Protected Species (ToPS) in terms of section 56(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA). Thus, the national norms and standards require the development of a species biodiversity management plan (BMP-S). Furthermore, the listing of black rhinos on Appendix I of CITES requires the highest level of national and international trade controls,

The current plan is a third revised edition following the first and second editions that were drafted in 1989 and 1997, respectively. The plan was jointly developed by South African members of the SADC Rhino Management Group (RMG) (see Appendix 1).

The purpose of this plan, in terms of the NEMBA, is to ensure the long-term survival in nature of the species and provide for the responsible person, organization or organ of state to monitor and report on the progress with implementation of the plan; and in line with other related legislation.

1.2 Rhinos as flagship species

Where wildlife-based land-use systems are established, rhinos act as true "flagship species" because they require large areas and significant protection measures that help to conserve a wide range of biodiversity (du Toit 2006). The conservation of these rare and charismatic animals also attracts donor as well as state support, with the latter being stimulated by the national prestige of rhino conservation projects; and the fact that rhinos are a major attraction for eco-tourists, in turn creating jobs and bringing in Forex. Where markets have been established, such as in South Africa, rhinos have a high value in live sales, thus generating revenue for wildlife operations. Black rhino are a national heritage, and also have spiritual/existence value for many people.

Rhinos can add significant value to wildlife operations. For example between 2000 and 2005, live sales of white and black rhinos from Hluhluwe-iMfolozi Park generated the equivalent of 60% of the park's conservation budget; and surveys of tourists in this park, as well as in private reserves in South Africa and Namibia, indicate that 7-14% of total wildlife viewing value can be ascribed to rhinos (Spenceley &

Barnes, 2005). Moreover, they have considerable value at times fetching prices in excess of R500,000 per animal on auctions.

1.3 The aim and objectives of the Biodiversity Management Plan

NEMBA provides the opportunity for any person, organisation or organ of state desiring to contribute to biodiversity management to submit to the Minister, for approval, a draft management plan for an indigenous or migratory species warranting special conservation attention. The Norms and Standards for the development of BMP-S, developed in terms of section 43 of NEMBA, outlines the process, format and scope that should be used to develop biodiversity management plans for indigenous species.

Biodiversity Management Plans for Species (BMP-S) is a tool to guide the management of indigenous species (and any sub-specific taxa) and groupings of indigenous species that are adversely affected by similar threats and enables the evaluation of progress with regard to such management. It establishes measures to ensure the protection, conservation and sustainable management of indigenous species. It forms part of a dynamic and continuing management planning process and allows for review and monitoring of actions to accommodate changing priorities and emerging issues.

The conservation plan for the black rhino (*Diceros bicornis*) in South Africa was jointly developed by South African members of the SADC RMG to promote the development and long term maintenance of viable populations of the various sub-species of African rhinos in the wild. This conservation plan was developed essentially for coordinated directional action to clearly identify goals within an approved policy framework, mechanisms for achieving the goals, and to allow success to be evaluated.

This conservation plan is a third revised edition following the first edition which was developed in 1989 and the second edition of 1997 consecutively, in order to update the latest information on rhino numbers and to realign the plan with the norms and standards for BMP-S in published in terms of the NEMBA and other recently developed environmental management tools.

The purpose of the plan, in terms of the act, is to ensure the long-term survival in nature of the species and provide for the responsible person, organization or organ of state to monitor and report on the progress with implementation of the plan; and to be consistent with NEMBA, the National Environmental Management Principles, the National Biodiversity Framework, any relevant international agreement, and any other relevant environmental management plans.

2. BACKGROUND

2.1 Continental and National Black Rhino Trends – The importance of South Africa

High levels of poaching was primarily responsible for the crash in black rhino numbers from a continental population of approximately 100,000 in 1960 (Cumming *et al.* 1990.) to a low of 2,410 in 1995. Since then, and with concerted conservation action, continental numbers have increased reaching 4,880 by the end of 2010 (Emslie & Knight 2011). The species remains listed on the IUCN's Red as Critically Endangered.

In 1980 the South African population of black rhino was approximately 630, accounting for < 5% of the continental population. By the end of 2010, South Africa conserved more black rhinos (1,915) in the wild than any other range State and accounted for approximately 39% of the continental total (Figure 2). Thus the global importance of the South African population has increased dramatically over the past 30 years.

In 2010 the bulk of the black rhino in South Africa were the south central black rhino (*D. b. minor*) with South Africa conserving just over 1,680 (or 76%) of this subspecies.

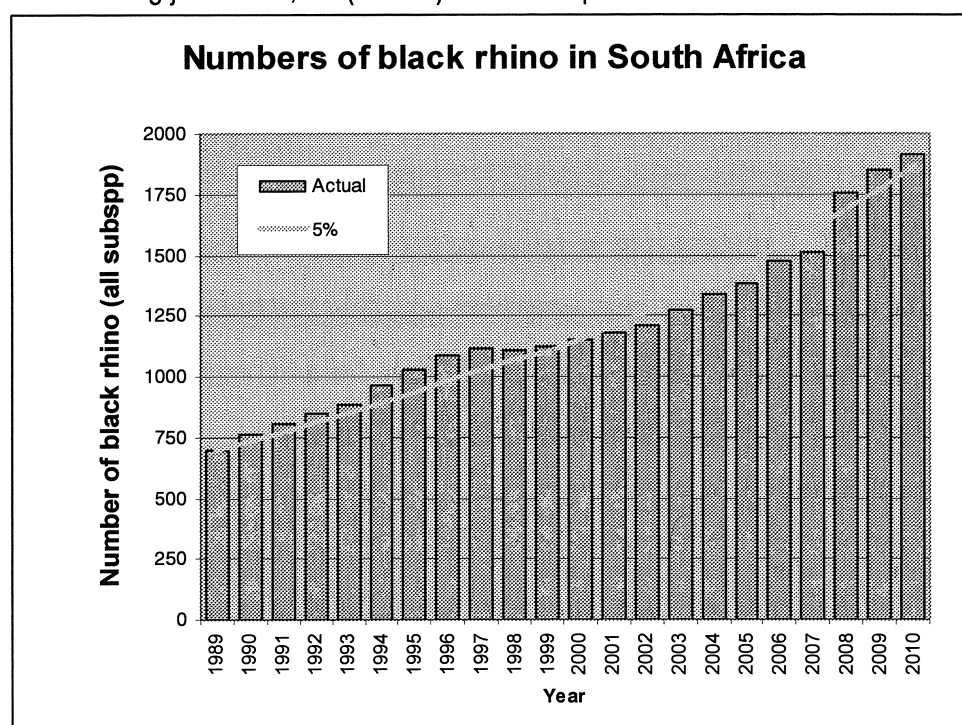


Figure 2: Numbers of black rhino (of all three sub species) in South Africa between 1989 and 2010. The pattern primarily reflects the trends in the most numerous subspecies *D.b minor*. The yellow line shows the predicted number of rhinos if the minimum target growth of 5% had been achieved (after making allowances for translocations in and out of the country). Over the 21 year period the average underlying growth rate has been just above minimum target levels at 5.17%/annum. The jump in numbers between 2007 and 2008 is due to improved population estimates for the country's largest population and that prior to this more conservative estimates were used for this population.

These animals were distributed through 56 populations in the country. South Africa also has the only populations of south western black rhino (*D.b. bicornis*) outside of Namibia. At the end of 2010 there were 171 *D.b bicornis* in South Africa, making up 8.9% of the continental total. As of the end of 2010 South Africa also managed an estimated 8.1% (60 animals) of the "out of range" *D.b. michaeli* subspecies.

2.2 Subspecies/ecotypes in South Africa

2.2.1 Taxonomy

There are two recognized indigenous subspecies/ecotypes of black rhino in South Africa (*D.b.minor* and *D.b.bicornis*) with a single out of range population of *D.b.michaeli* (Cumming *et al.* 1990). See Appendix 2 for more details.

With the exception of two surviving *D.b.minor* populations in KwaZulu-Natal (Hluhluwe-iMfolozi and uMkhuze); all other South African black rhino populations have been created through translocations. As of December 2010 re-introduced and introduced populations conserved 87.2% of South Africa's black rhino.

Historically the boundaries between the three remaining black rhino subspecies were not "hard-edged" in contrast to the markedly discontinuous range of the two white rhinoceros *Ceratotherium simum* subspecies. However, there are major differences in the habitat and climates in the core areas of the various subspecies, and it is likely that each subspecies developed specific genetic or behavioural adaptations to the environment. Centuries ago, when black rhinos were common and more widely distributed, one can have expected a clinal genetic gradient to have existed across areas of contiguous rhino habitat between subspecies core ranges. However, for practical and conservation reasons, it has been decided that the subspecies/ecotypes should not be mixed. Given this decision, there is a practical need for a distributional map to clearly demarcate which subspecies can be introduced where.

Some areas within subspecies areas of occurrence (*sensu* IUCN Red Listing) may have unsuitable or more marginal habitat, with rhinos probably either being absent or likely to have only occurred at very low densities in these areas. Thus it is important to realize that some areas marked as range for a subspecies on a map such as Figure 3 may be unsuitable for black rhino reintroduction (such as areas of Highveld grassland in the Free State). Thus before the establishment of a new population takes place, not only should the reintroduction area fall within the area demarcated for that subspecies (Figure 3), but it should also have been rated by black rhino habitat experts as having sufficient suitable habitat to hold a breeding population. In time, it may be possible for the SADC Rhino Management Group (RMG) (see Appendix 1) to refine Figure 3 by identifying and excising (or marking) more areas of unsuitable/marginal habitat unsuitable for black rhino within currently demarcated subspecies areas of occupancy.

Due to a combination of topography, changing geology and unsuitable habitat, the Transkei area north of the Kei river up to Lesotho and just southwards of the southern KwaZulu-Natal boundary has resulted in an area of the country where black rhinos or kudu apparently never historically occurred (Skead *et al.* 2007, Kerley *et al. in prep*, Mike Knight, David Balfour and Peter Goodman *personal communication*). It is now believed that this "Transkei Gap" acted as an effective barrier to the spread of *D.b.minor* south from KwaZulu-Natal creating a hard edge between subspecies in northern Eastern Cape and southern KwaZulu-Natal. For this reason, it is likely that *D.b.bicornis* would have spread westwards through the Eastern Cape up to the Kei river; rather than being restricted to only the drier areas in the west of the province as was postulated in previous plans based largely on the 500mm rainfall isohyets (Hall-Martin & Knight 1994), or as proposed in an earlier version of this plan based on the 400mm rainfall isohyet. Given the historical records of kudu sightings southwards along drainage lines through Namibia it is also postulated that black rhino could also have spread southwards from Namibia into South Africa (Richard Emslie *personal communication*).

There have been differences of opinion regarding nomenclature and possible historical ranges of the two indigenous subspecies in South Africa. However, following consultation with RMG provincial

representatives and their colleagues and some IUCN SSC African Rhino Specialist Group members, a revised subspecies distributional map (Figure 3) has been drawn up which more closely reflects latest knowledge and majority thoughts (including that of IUCN's AfRSG) on probable historical rhino distributions in the country.

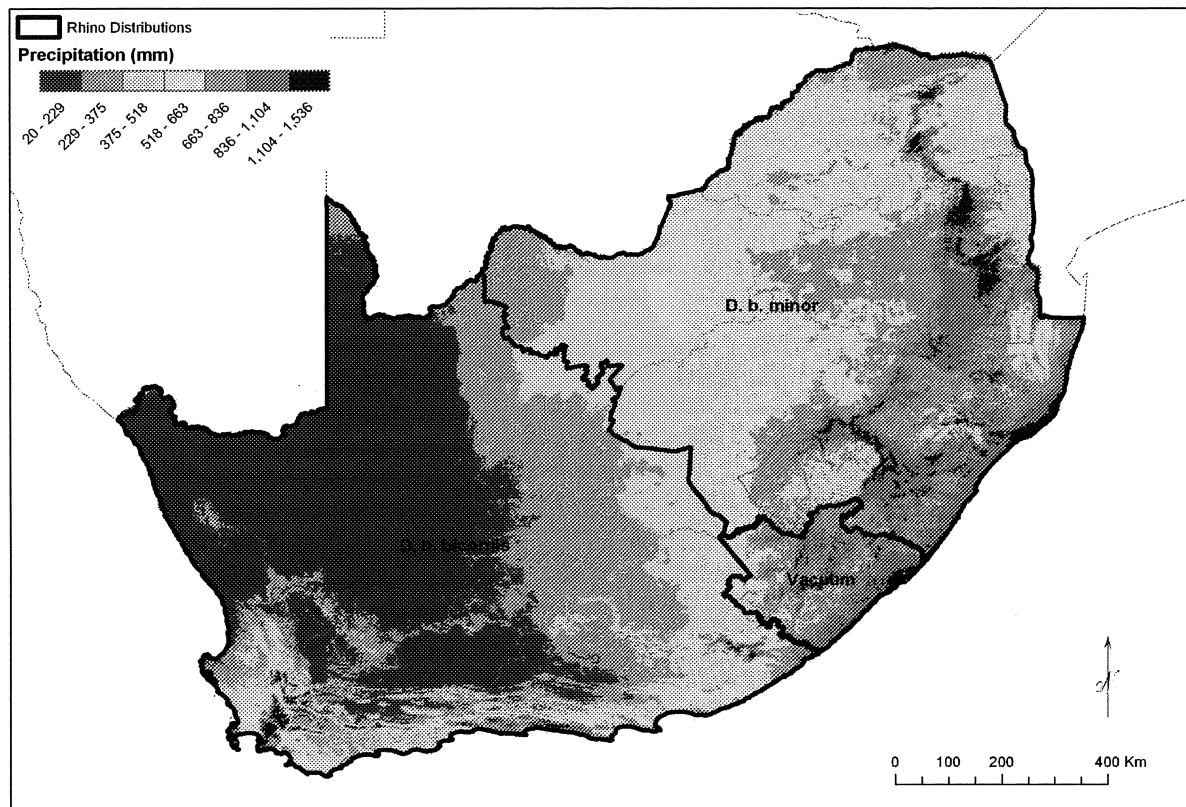


Figure 3: Revised subspecies ranges and annual rainfall with *D.b.bicornis* being the more arid adapted subspecies. Note the *D.b.bicornis* area in south western Free State, and that deemed *D.b.bicornis* range in the Eastern Cape has now expanded westwards up to the “Transkei Gap” which is now classified as extra-limital (and not range for either indigenous subspecies) and a barrier to movement of *D.b.minor* southwards. It is important to realise that some areas marked as subspecies range in Figure 3 contain unsuitable/more marginal habitat, with rhinos probably either being absent or likely to have only occurred at very low densities in these areas (e.g. parts of Free State). On pragmatic grounds North West and Free State provinces have decided to classify themselves as single subspecies *D.b.minor* provinces, although a case could have been made for these provinces to be subdivided based on rainfall. Rainfall base map from Schultze (1997).

2.2.2 Subspecies distribution areas within South Africa

Figure 3 gives the revised SADC RMG recommended distributional ranges for the two indigenous subspecies/ecotypes of black rhino in South Africa, and these hard subspecies distribution boundaries have been set for future management simplicity. For practical reasons, the use of “grey” zones where mixing of subspecies could be allowed has not been supported. There must be no possibility of subspecies mixing.

Gauteng, KwaZulu-Natal and **Mpumalanga** have been classified as *D.b.minor* only provinces. In North West province, the more arid south western areas west of the N18 highway could potentially have been demarcated as a *D.b.bicornis* area. However, because provincial boundary changes are set to reduce the size of the potential *D.b.bicornis* area (which much of this area being incorporated into the Northern Cape), **North West** has decided that for ease of management the whole province should also be classified as a *D.b.minor* only area. Similarly although the more arid south west of the province that largely covers the Nama Karoo biome (Mucina & Rutherford. 2006) could have been demarcated as a *D.b.bicornis* area, Free State has also decided for a number of practical reasons to classify the whole province as a *D.b.minor* only area.

The private reserve in **Limpopo** with the one *D.b.michaeli* population is the only allowable area for this out of range subspecies in South Africa. The rest of Limpopo province is demarcated as a *D.b.minor* only area.

The south-western black rhino (*D.b.bicornis*) is still considered as the more arid-adapted subspecies and **Northern Cape** has been classified as a solely *D.b.bicornis* province.

The potential for different subspecies to spread or not spread also needs to be taken into account when setting subspecies boundaries. On account of both the 'Transkei' gap limiting movement of *D.b.minor* southwards from KwaZulu-Natal and the postulated spread of *D.b.bicornis* from Namibia down into the Western Cape along drainage lines²; **Western Cape** has been defined as a *D.b.bicornis* area, despite the area's wetter climate, and that in terms of ecotypic adaptations the more mesic *D.b.minor* might be more suitable. The Western Cape currently has one private reserve with a surplus male *D.b.minor*.

Following the decision by North West and Free State to classify their provinces as *D.b.minor* range, there is only one remaining province which could have separate areas for both indigenous South African black rhino subspecies.

In all earlier versions of the South African Black Rhino Conservation Plan (including earlier versions of this 3rd edition) rainfall isohyets (selected somewhat arbitrarily at 400-500mm) were used as the primary basis for setting the putative east-west subspecies/ecotype boundaries in the **Eastern Cape** (Brooks & Adcock (1997) based on proposals by Hall-Martin & Knight (1994)). However since the 2007 revision of the plan, the subspecies boundaries in the Eastern Cape have been substantially revised to take into account of the probable impact of the "Transkei Gap" on rhino movement. Figure 3 shows that the north-east of the province ("Transkei Gap" area north of the Kei river) has been classified by Eastern Cape as extra-limital, and as a result no populations of black rhino will be allowed to be established in this area, with the rest of the province being designated as *D.b.bicornis* range, with no new *D.b.minor* populations being established in the Eastern Cape. Recently the first *D.b.bicornis* population in the Eastern Cape was established. Historically three *D.b.minor* populations and one male only population were set up in a limited area of the Eastern Cape to the east of the 400mm isohyet, at a time when the wetter east of the province was defined as a *D.b.minor* area. These now "out of range" *D.b.minor* populations have done well since they were established. In particular, the Great Fish River Reserve population has grown rapidly to become one of only six **Key1** black rhino populations of continental significance, and this population has also recently become an important donor population. Given the history, and on pragmatic species conservation grounds³, the **Key1** Great Fish River donor population should be maintained as an out of

² This is currently the generally held view but there are differences of opinion (Kees Rookmaaker personal communication and Lloyd P 2003) as to whether *D.b.bicornis* spread all the way from the Western Cape to Namibia and was the same subspecies.

³ Given (i) the very high costs of establishing and/or re-locating a population as large as Great Fish River (likely to cost in the millions of rands and take many years); (ii) possible losses of rhino during translocations; (iii) likely temporary losses in productivity during a population establishment phase (iv) the fact that this population is performing well (v) it has become a SA Black Rhino Biodiversity Management Plan 2011-2020

range *D.b.minor* population. The other smaller privately-owned *D.b.minor* populations in the Eastern Cape however will be encouraged to replace their *D.b.minor* with *D.b.bicornis* should the opportunity arise in future (for example the need for *D.b.bicornis* for *D.b.minor* swap deal involving South Africa should Namibia wish to donate some founder black rhino to a *D.b.minor* range state).

It is important to realise that the South African black rhino plan revised subspecies boundaries shown in Figure 3 represent a practical construct for management purposes and may not exactly match historical subspecies distributions, which in any event are imperfectly known and probably always will be.

2.3 Trends in South African black rhino subspecies.

Trends in the populations of the individual sub species since 1989 are presented in the Figure 4. Also see Appendix 3 for details. From this it is clear that they have different dynamics and it is important to understand the causes of these trends for management purposes.

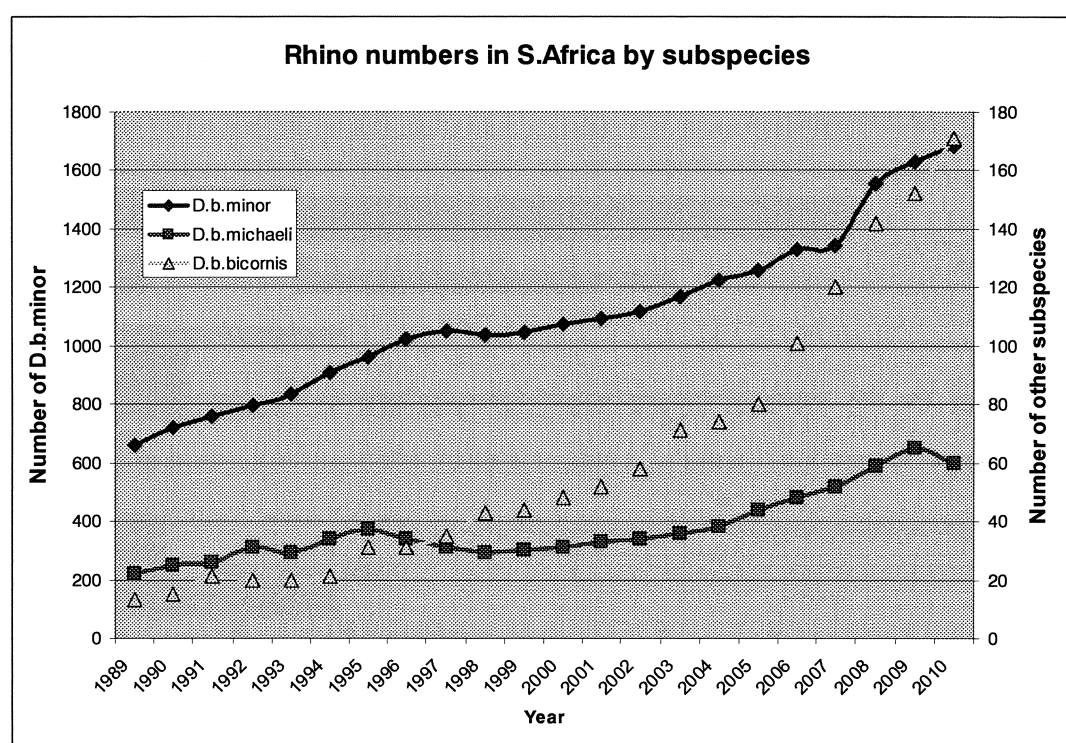


Figure 4: Increase in the population size of the three subspecies of black rhino in South Africa since 1989. NB. These trends have been affected by translocations into & out of the country with total net exports of 87 *D.b.minor* and 15 *D.b.michaeli* and a net import of 50 *D.b.bicornis* over the 21 year period. The jump in *D.b.minor* numbers from 2007-2008 is due to the use of improved population estimation in the biggest population and the previous use of more conservative estimates.

2.3.1 Trends in southern-central black rhino (*D.b.minor*) numbers

major donor population and (vi) *D.b.minor* is still classified in both IUCN and South Africa's Red List as Threatened – Critically Endangered it is not recommended that any attempt be made to remove the *D.b.minor* from this population and replace them with *D.b.bicornis*.

Figure 5 shows *D.b.minor* meta-population performance since 1989 when RMG annual status reporting started has had three different phases. During an initial rapid growth phase from 1989-1996, the South African *D.b.minor* meta-population achieved a net growth rate of 6.6%, and in only 7 years was 106 ahead of minimum target numbers. However, as the densities of black rhinos (and sometimes other potentially competing browsers) built up in a number of populations following conservative removals, the overall growth rate of South Africa's *D.b.minor* meta-population (after allowing for exported animals) slowed dramatically to average only 2.1% per annum over the period 1996-2001 before increasing again. From having been well ahead of target in 1996, this reduction in meta-population growth resulted in numbers dropping to below the 5% target line by the end of 2000. Improved growth rates following more aggressive biological management and recent improved higher population estimates for the largest population have resulted in total estimated numbers were only 23 short of the 5% target by the end of 2010 (Figure 5).

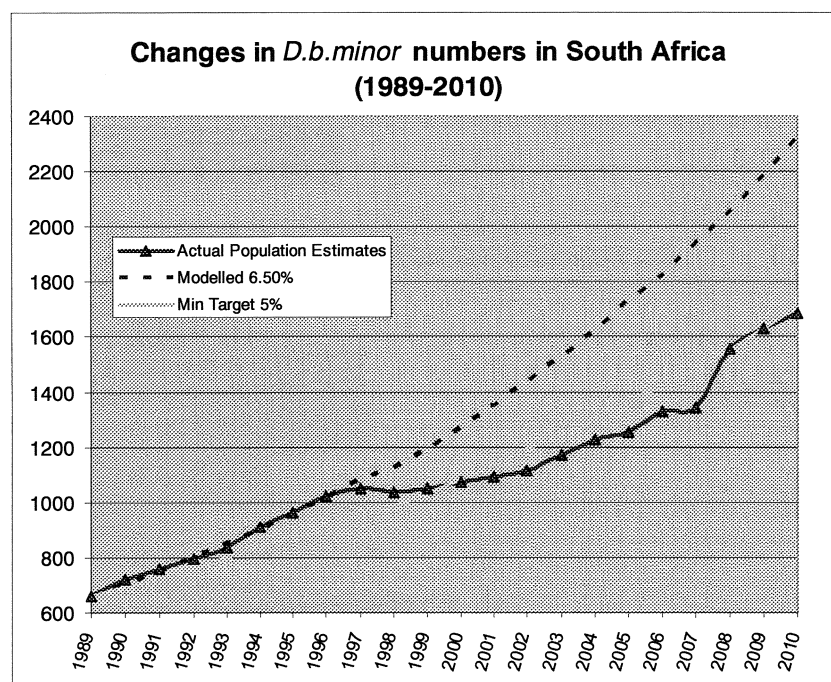


Figure 5: Trend in estimated numbers of *D.b.minor* in South Africa (□) since the start of the RMG and annual status reporting. The other two lines show the expected numbers of black rhino at the minimum desirable meta-population target growth rate of 5% per annum (solid line) and for 6.5% (dashed line) which is close to the 6.6% achieved for the seven year period 1989-1996. The calculations used to derive Figure 4 allow for a net 87 *D.b.minor* that were exported from South Africa during the period 1989-2010. Note, how following the period of rapid growth from 1989-1996, growth rates declined (to 2.1%) for the 5 years 1996-2001. Following increased removals meta-population growth has increased averaging 5.3% from 2001-2010. However, part of the increase from 2007 is due to recent improved higher estimates for the largest population (Kruger NP) following an improvement in monitoring and the use of helicopter block counts in the Park.

Concerns about sub-target growth rates led to the RMG holding a Biological Management workshop in 2001, and IUCN SSC AfRSG, SADC RMG and SADC RPRC have actively promoted the importance of improved biological management and harvesting for growth since then. This has coincided with an improvement in meta-population growth rates.

Average annual *D.b.minor* growth over the 21 year period 1989-2010, after allowing for transboundary introductions and removals has been 4.94% (very close to achieving the minimum target level of 5%). If a

minimum target growth of 5% could be maintained the population would reach the plan target of 2,800 *D.b.minor* by 2021 (Figure 6). Increasing the growth rate to just over 5.2% would allow the target to be met by 2020. However, if population growth rates are reduced to say 3% as a result of increased poaching, then the target of 2800 animals would only be met by 2028. If meta-population growth of 6.5% (similar to the 6.6% achieved for 1989-96) could have been maintained for the whole period 1989-2010, there would have been a staggering 38.1% (642) more *D.b.minor* by 2010 (2,326 vs 1,684) which is almost equivalent to the size of the South African *D.b.minor* population when the RMG was founded in 1989 (661). Over 10 years 2010-2020 the difference between achieving a 3% or 6.5% average growth would be 898 rhinos which is equivalent to double the total number of all rhinos (white and black) poached in South Africa in 2011. Small differences in growth rates translate into many more or many fewer rhinos in future; and the more rapid the growth in numbers the bigger the buffer against poaching. The corollary is that with sub-optimal biological management over a period one can effectively "lose" more rhinos than poaching.

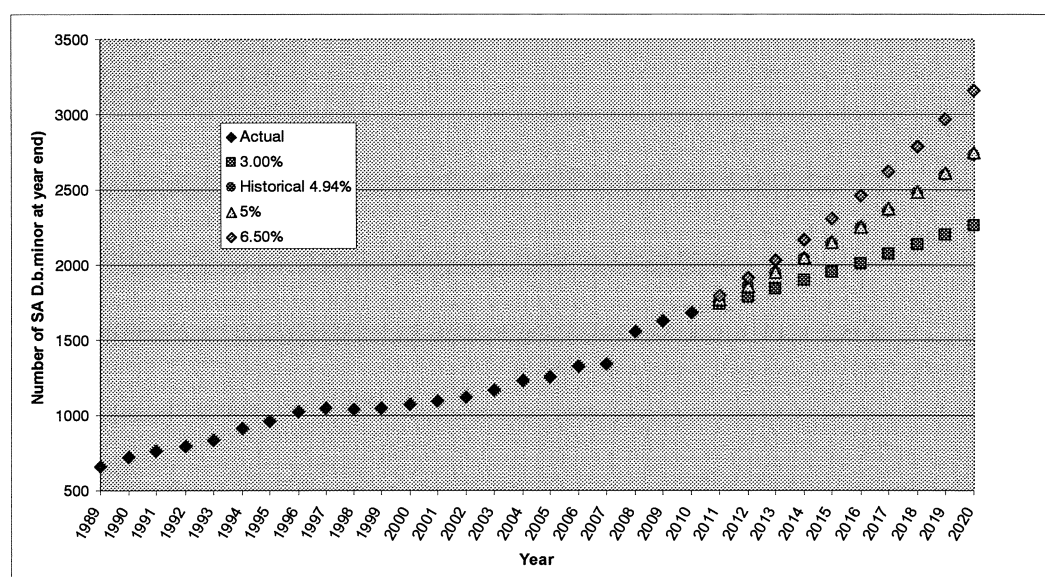


Figure 6. Estimated future population growth of the South African *D.b.minor* metapopulation under different growth rate regimes (assuming no transboundary translocations): at the historical 1989-2010 growth rate of 4.94%, minimum 5% target growth, a low 3% growth rate and higher 6.5% rate. The jump in numbers in 2008 is due to the use of improved population estimation methods in the largest population and the use of more conservative estimates for this population before this.

These facts highlight the critical importance of maintaining rapid growth rates, and show how small improvements in growth rate, can over time, result in a big increase in the number of rhinos. Removals have increased in some populations with corresponding improved or sustained performance. However in some cases removals have not yet translated into rapid growth in response; and in such instances, the potential negative impacts of possible selective removal from certain areas, social factors, habitat change and increasing numbers of potential competing browsers deserves increased attention. As expected many reintroduced populations have performed well.

Numerical targets for subspecies meta-populations will be adjusted on an ongoing basis to take any improved information. The key principle of seeking to achieve a minimum 5% annual net growth rate (after allowing for transboundary translocations) remains when calculating targets.

While this plan focuses on performance of rhinos remaining in South Africa, the country has played an important role in providing founder rhinos to help re-establish *D.b.minor* populations elsewhere, namely in Swaziland, Zimbabwe, Botswana, Malawi and Zambia (as well as *D.b.michaeli* to Tanzania). The Malilangwe population in Zimbabwe has performed very well. At the end of the Plan period performance of exported rhinos should also be assessed to determine whether black rhinos exported from South Africa have been invested wisely.

2.3.2 Trends in South African south western black rhino (*D.b.bicornis*) numbers

Figure 7 below shows that not only has average growth of south-western black rhino in South Africa exceeded the minimum acceptable target growth rate of 5%, growth has exceeded 6.5%. Average annual growth over the period 1989-2010, after allowing for introductions and removals has been 8.63%. If this good rate of growth can be maintained, without any importing any more animals, the intermediate (10 year) target of 260 *D. b. bicornis* will be reached in early 2016. It will take a further 8 years (till end of 2023) or total of 13 years from the start of 2011 to reach the South African meta-population target of 500 *D.b.bicornis* (Figure 8). Given numbers at the beginning of 2011 it will take 22 years at the minimum target growth rate of 5% to reach the 500 target population. However if poaching and sub-optimal biological growth were to reduce growth to 3% it would take 37 years to reach 500 (almost 3 times longer than at historical growth rates). Obviously if additional founder animals can be sourced from Namibia it will be possible to reach conservation targets much sooner.

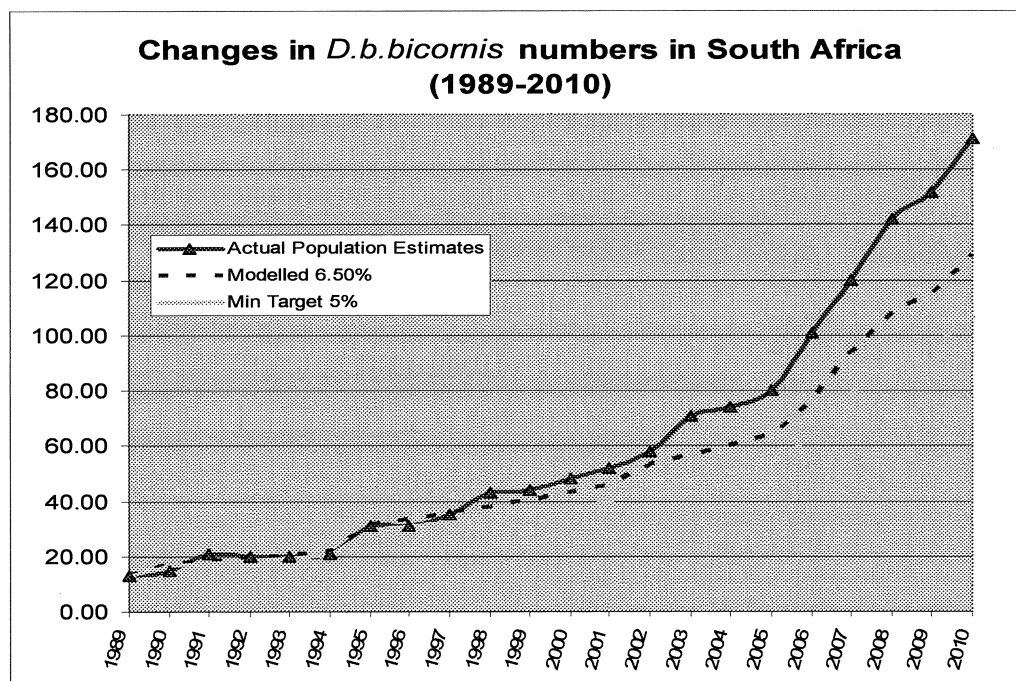


Figure 7: This graph shows the trend in estimated numbers of *D.b.bicornis* in South Africa (□) since the start of the RMG and annual status reporting (1989-2010). The other two lines show the expected numbers of black rhino at the minimum desirable target meta-population growth rate of 5% per annum (solid line) and for an average annual 6.5% growth rate (dashed line). The calculations allow for the net 50 additional founder *D.b.bicornis* that were imported into South Africa during the period.

The growth of this subspecies for the period 1989-96 (6.7% per annum) was similar to that achieved by the south-central black rhino (6.6% per annum). However, in contrast to *D.b.minor*, average *D.b.bicornis* growth rates have increased after 1996, and this meta-population has been performing very well. However should poaching impact this population and reduce the annual growth rate to around 3%, the population would take until well beyond 2040 to reach the planned target (Figure 8).

The consolidation and expansion of the Addo Elephant National Park also offers the potential for this park to eventually conserve a significant AfRSG-rated **Key** population of *D.b.bicornis* which would then become the first **Key** population outside of Namibia which is the stronghold for this subspecies.

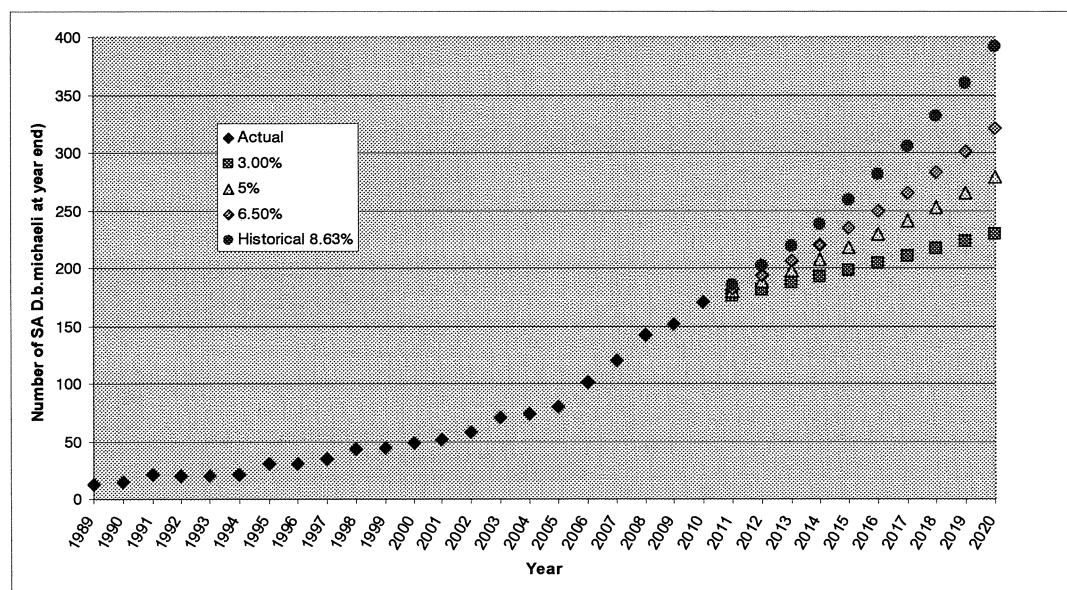


Figure 8. Estimated population growth of the South African *D.b.bicornis* population under different growth rate regimes: at the historical growth rate of 8.63%, targeted 5% growth, 6.5% and a low 3% growth rate.

2.3.3 Trends in out of range eastern black (*D.b.michaeli*) rhino numbers

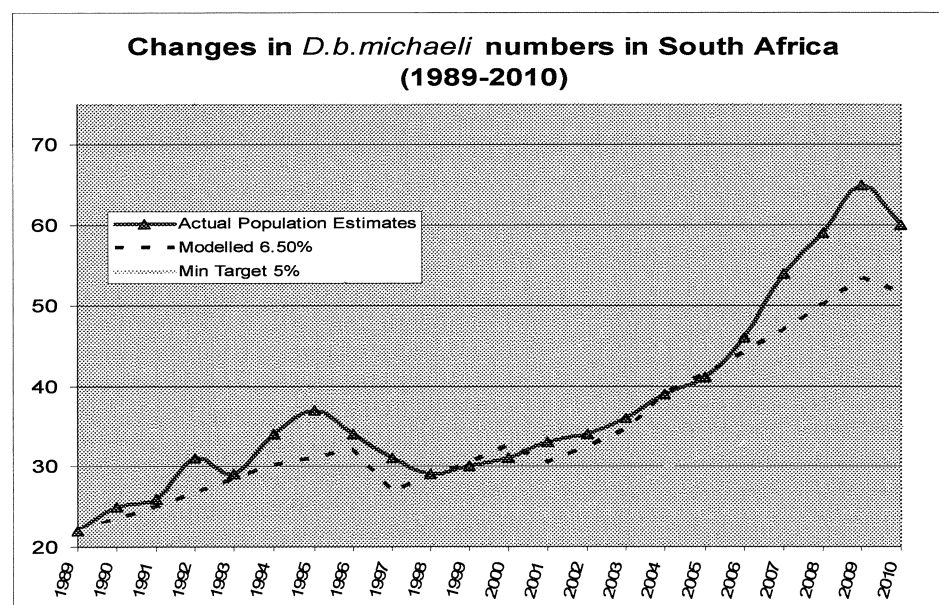


Figure 9: Trend in estimated numbers of *D.b.michaeli* in South Africa (□) since the start of the RMG and annual status reporting. The other two lines show the expected numbers of black rhino given the minimum desirable target meta-population growth rate of 5% per annum (solid yellow line) and for a higher average

annual 6.5% growth rate (dashed blue line). The calculations allow for net export of 15 *D.b.michaeli* during the 21 year period.

The South African *D.b.michaeli* meta-population growth rate has not only exceeded the minimum acceptable target growth rate of 5%, but has in general exceeded 6.5% (Figure 9). For periods growth has exceeded 10%. The apparent dip in performance in the late 1990s coincided with the movement of most of the *D.b.michaeli* out of Addo. The average underlying growth after allowing for transboundary translocations over the period 1989-2010 was 6.92%.

The single remaining South African population of this out of range subspecies has grown at an average of 8.23% since it was founded in 1998. At this rate the population would reach 100 animals during 2017 (Figure 10). However, the condition of sale that this subspecies must be restricted to a single property in the country, means that to keep this population productive in the longer term will require the export of surplus animals back to zoos and to the former range of this subspecies. Ideally, it would be desirable if all out of range eastern black rhino could be translocated back to former range freeing up more space for the indigenous southern-central black rhino. A detailed assessment of the carrying capacity of this population has been carried out to inform management decision-making. It is probable that over half of this population will shortly be translocated back to former range for this subspecies in Tanzania with one batch of animals being moved in 2010 (explaining the dip in numbers that year).

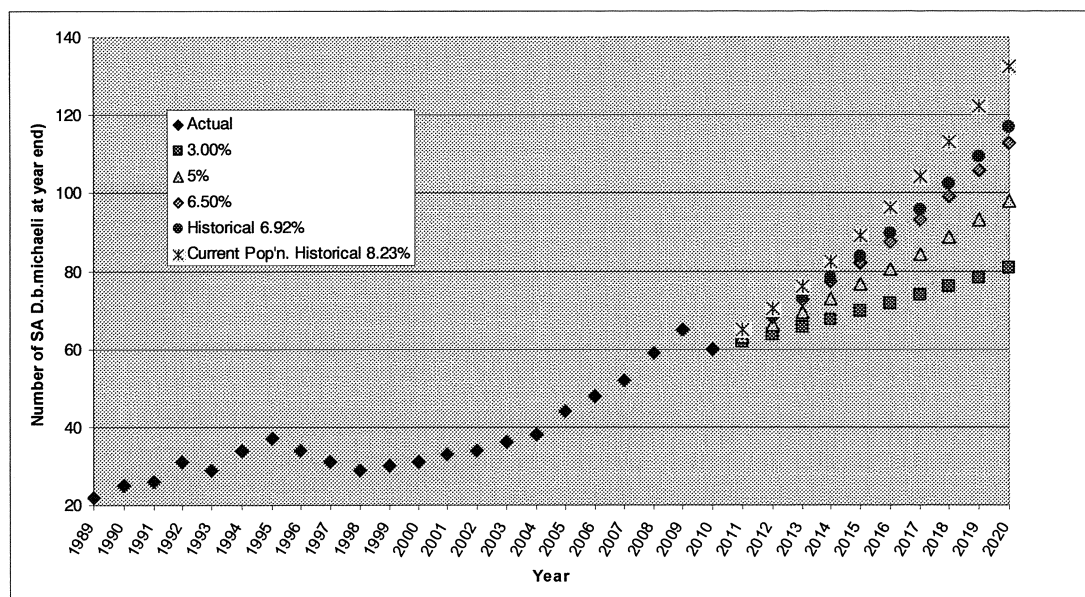


Figure 10. Estimated population growth of the South African *D.b.michaeli* population under different growth rate regimes: at a low 3% growth rate, targeted 5% growth, a higher rate of 6.5%, the historical rate of 6.92% (achieved from 1989-2010) and the historical rate of 8.23% achieved up to the end of 2010 by the current single population since it was established in 1998.

3. CONSERVATION STATUS AND LEGISLATIVE CONTEXT (South African Legislation and Relevant International Conventions)

3.1.1 South African National Environmental Management and Biodiversity Act, 2004 (Act No. 10 of 2004) – (NEMBA)

The Act gives effect to the constitutional commitment to taking reasonable legislative measures that promote conservation by providing for the management and conservation of biological diversity and the SA Black Rhino Biodiversity Management Plan 2011-2020

sustainable use of indigenous biological resources. Chapter 3 provides for the planning and monitoring of biodiversity.

Section 43 (1)(b) and (c) of the Act provide for any person, organisation or organ of state, desiring to contribute to biodiversity management, to submit to the Minister for approval a draft management plan for an indigenous or migratory species warranting special conservation attention.

NEMBA section 44 empowers the Minister to enter into an agreement with any person, organisation or organ of state for the implementation of a BMP-S

3.1.1.1 National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): Threatened or Protected Species Regulations (ToPS)

The Threatened or Protected Species (ToPS) Regulations under NEMBA came into force in February 2008. The regulations provide for the protection of species that are threatened or in need of protection to ensure their survival in the wild and give effect to the Republic's obligations. These require a permit to be issued in order for a person to carry out a listed restricted activity concerning black rhino. This will include hunting, capturing, killing, cutting parts off, importing or exporting into or from South Africa, having in possession of exercising physical control over any black rhino; breeding, translocating, moving, selling, donating or accepting any black rhino or any of its products or derivatives as a gift.

The black rhino is listed as an endangered species under the ToPS Regulations. Therefore, it is compulsory for any black rhino conservation sanctuary owner, rehabilitation facility owner, wildlife trader, captive breeder or zoo owner to register for the operation of the facility. Game farmers with black rhinos can voluntarily apply for registration and obtain a standing permit valid for three years.

Under the ToPS Regulations the put and take hunting of a captive bred black rhino, when released from its captive environment onto an extensive wildlife system, is outlawed. Captive bred animals also cannot be obtained with the intention of put and take hunting them; but this does not apply to black rhinos kept in extensive fenced wildlife systems where the animals have been fending for themselves for at least two years. ToPS Regulations have been taken into account in designing the revised black rhino hunting permit application and approval system.

Further black rhino may not be transported to a protected area if the protected area falls outside the natural distribution range of black rhino. This prohibition is not applicable to extensive wildlife systems that have **NOT** been declared as protected areas.

The current penalty in NEMBA for transgressions involving black rhino is:

1. A fine, not exceeding the amount prescribed in the Adjustment of Fines Act, or not exceeding 3x the commercial value of the specimen in question, whichever is the greater amount, or
2. Imprisonment not exceeding 5 years, or
3. Both such fine and imprisonment.

However, DEA has requested amendment of the penalty clause, to be as follows:

1. A fine, not exceeding R10 million;
2. Imprisonment, not exceeding 10 years, or
3. Both such fine and imprisonment.

3.1.2 National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) (NEMPAA)

NEMPAA provides for the protection and conservation of ecologically viable areas representative of South Africa's biodiversity and natural landscapes and seascapes in protected areas. Protected areas in South Africa offer a viable tool for habitat protection and the protection and maintenance of ecologically viable numbers of the black rhino and their associated.

3.1.3 Other relevant South African Acts

Apart from the National Environmental Management Act, 107 of 1998 (NEMA) and its related Acts, the nine provincial conservation ordinances/acts are the major regulatory instruments for the regulation of wild plant and animal species in South Africa. Supporting decision making instruments include national norms and standards and provincial policies. In extreme cases prohibition of activities involving wildlife may be instituted either at national or provincial level by means of a moratorium. Other Acts such as the Animals Protection Act which regulates animal welfare in South Africa is also applicable to wildlife. The Animal Health Act, Animals Diseases Act, Medicines and Related Control Substances Act and the Animal Matters Amendment Act which falls under the jurisdiction of the Department of Agriculture, Forestry and Fisheries may also be relevant to black rhino conservation as it plays a significant role in veterinary care of animals.

3.1.4 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

South Africa is a Party to the CITES which governs and controls international trade in endangered species. The black rhino is listed in Appendix I of CITES which require the highest levels of control.

Under CITES all commercial international trade in rhino products such as horn is banned. However permits may be issued for the translocation of live animals to another country provided the principle purpose of the supposed importation is not detrimental to the survival of the species in the wild and the specimen has been obtained legally. Low intensity, non-consumptive tourism (provided it does not develop into the type of intrusive commercial activity that could compromise the breeding programme) can be considered to be a secondary, rather than a primary reason for importation. However the interpretations that may be made of the CITES regulations are complex and potentially contentious, especially the interpretation of what constitutes "primarily commercial purposes". It is therefore recommended that prior to export or import of any black rhinos clarification on this matter is sought from the CITES Management Authorities in South Africa (at the nine provincial conservation departments or the Department of Environmental Affairs in Pretoria). For the translocation of a black rhino to another country the importing country's CITES Management Authority has to issue a CITES import permit before the exporting country's CITES Management Authority will issue a corresponding export permit.

At the 13th CITES Conference of the Parties (CoP) a quota for the annual hunting of up to 5 black rhino to deal with the surplus male black rhino problem and further a number of demographic or genetic goals, was approved. An attempt to have these quotas rescinded at the 14th CITES CoP by Kenya was unsuccessful; but nevertheless this highlights the need for South Africa to ensure its hunting permit approval system is defensible and follows recommended best practices. The revision of the system for approving applications for hunting ensures this will be the case.

3.1.5 Convention on Biological Diversity (CBD)

South Africa is also a signatory to the CBD and as such has an international responsibility to conserve the two indigenous subspecies of black rhino found in South Africa. The objectives of the Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. The programmes of work developed under the CBD encourage parties to take a wide range of actions to biodiversity conservation and sustainable use.

The convention also provides for the establishment of a system of protected areas or areas where special measures need to be taken to conserve biodiversity. Parties are required to promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species of threatened species in natural surroundings through development and implementation of plans and other management strategies.

3.1.6 World Heritage Convention

The World Heritage Convention is a Convention concerning the protection of the world's cultural and natural heritage. It provides for the identification, protection and preservation of cultural and natural heritage, including the habitats of threatened species, around the world considered of outstanding value to humanity. Countries submit places for designation under the World Heritage List.

3.1.7 SADC Protocol on Wildlife Conservation and Law Enforcement

The SADC Protocol on Wildlife Conservation and Law Enforcement provides a clear rationale for ensuring that any national or regional goals for rhino conservation refer to the interdependency between human welfare and sustainable management of wildlife resources, within which the "flagship" role of rhinos is highlighted. Implementation of rhino conservation projects with a development orientation is also in accordance with one of the ten principles that were expressed in the "Agenda for Action" that was drafted at the World Parks Congress in Durban in 2003. Rhinos are particularly appropriate as "flagships" for regional cooperation in resource management because the decline of many of the sub-continent's rhino populations was due to cross-border poaching and illegal trading networks that extended through several countries. Showing a reversal of this trend, through regional cooperation in law-enforcement, sharing of rhino management expertise, and sharing of rhinos through meta-population management, would be a very graphic demonstration of SADC's effectiveness. Phase II of the SADC Regional Programme for Rhino Conservation (SADC RPRC) is likely to focus on regional re-establishment of rhinos in the SADC region, and as one of the major rhino range States, South Africa can play a key role in the SADC RPRC.

3.1.8 Lusaka Agreement

Although it is not one of the seven Parties to the Agreement; South Africa is one of three other countries that are signatories to the Lusaka Agreement. The Lusaka Agreement is a treaty between many African nations that seeks to "reduce and ultimately eliminate illegal trade in wild fauna and flora and to establish a permanent Task Force for this purpose." The Task Force members, endowed with broad diplomatic immunities, are charged with the task of investigating violations of various national laws and presenting evidence to the appropriate countries.

4. PLAN STRUCTURE

The current South African black rhino conservation plan has a logical structure with a 10 year time horizon with annual targets schematically illustrated in Figure 5. This chart shows how all the identified *Key Components* feed in to meeting the *Conservation Goals*, and that meeting these Goals will make a contribution towards the longer-term *Vision*. The diagram also shows that a series of *Actions/Strategies* are required to meet each *Key Component Objective*. In the body of the plan, each *Key component* (together with its associated *objective, rationale, strategies/actions* and *indicators of success*) is dealt with below. The main body of this plan outlines the key actions needed and additional detail and references for more information can be found in the attached Appendices.

4.1 VISION AND LONG-TERM GOAL

Mindful of South Africa's role in the conservation of the *Critically Endangered* (IUCN Red List) black rhino *Diceros bicornis*, the vision for the species in South Africa is:

4.1.1 Vision

Contribute to the recovery and persistence of the global black rhino population by having viable populations of the indigenous subspecies in natural habitat throughout their former range within South Africa and managed as part of a regional meta-population².

4.1.2 Long-term population goal

To have at least 3,000 *D. b. minor* and 500 *D. b. bicornis* in South Africa³, with at least four *D. b. minor* populations greater than 100 and another 10 greater than 50; and at least one *D. b. bicornis* population greater than a 100 and one greater than 50.

Viable = populations are secure, breeding, and managed as a meta-population on the basis of their cultural and socio-economic value.

² A meta-population consists of a group of spatially separated populations of the same species which interact at some level (Levins 1969) and in the case of black rhino this is primarily through translocations of animals between sub-populations.

³ The South African *D.b.minor* target has been increased as 1) Ezemvelo-KZN-Wildlife has set its own provincial target of 1,000, and the revised Strategic Plan for Conservation of Rhino in SANParks sets a goal of 2,000; and 2) because Lande (1998) has suggested that the Franklin-Soule estimate of desirable minimum effective number for long term genetic viability should be increased by a factor of 10 to $N_e =$

5,000 and if the effective number is only a quarter of actual numbers, this means we ideally need to aim for a long term meta-population size of 20,000 instead of only 2,000. The bigger the longer term vision in terms of rhino numbers – the more any national conservation effort will have to form part of a regional meta-population management conservation programme.

4.2 SHORT-TERM (10 years) GOALS AND TARGETS

4.2.1 Population targets

To achieve:

- **An average meta-population growth rate¹ for both of the two indigenous subspecies of black rhino of at least 5% per annum.**
- **Meta-population sizes of at least 2,800 for *D. b. minor* and 260 for *D. b. bicornis* by the end of 2020^{2,3}**

¹. This growth rate reflects the underlying growth rate of the meta-population – i.e. is independent of any increases or decreases in numbers due to export or import of rhino out or into the country.

². In addition to domestic South African targets, at the end of the Plan lifespan a separate assessment should also be undertaken of the performance of populations in other range states that have been established with exported South African rhinos (for the Plan period 2011-2020 as well as to date).

³. Progress against meta-population targets should be assessed regularly and not just at the end of the plan lifespan and annual targets should be adjusted to reflect any imports or exports of animals into or out of the country

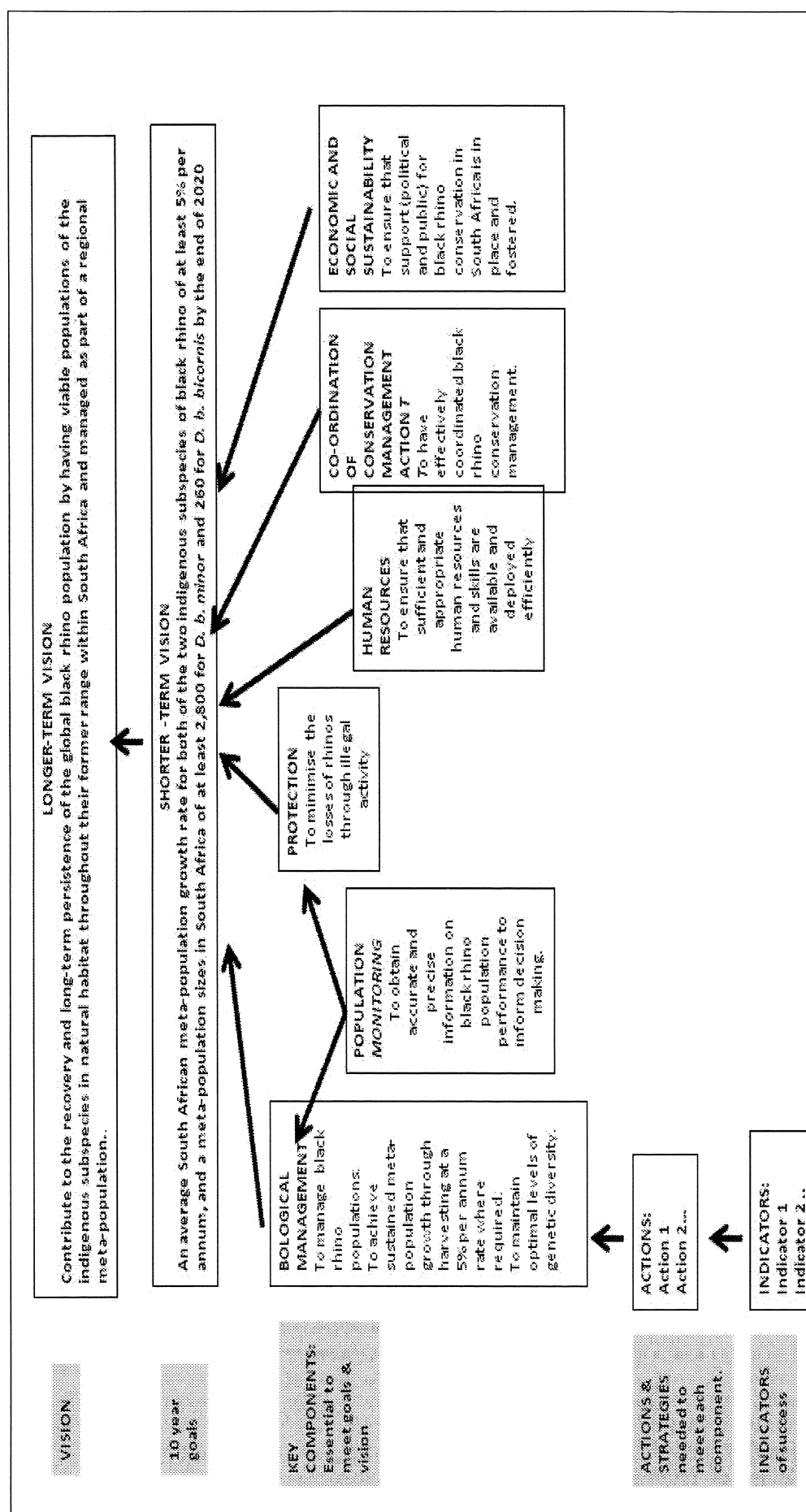


Figure 11: The South African black rhino conservation plan structure at a glance. See Key Component sections for a list of recommended actions and indicators.

5 KEY COMPONENTS

5.1 BIOLOGICAL MANAGEMENT

5.1.1 Objective

To manage black rhino populations:

- **To achieve sustained meta-population growth through harvesting at a 5% per annum rate where required.**
- **To maintain optimal levels of genetic diversity.**

5.1.2 Actions/Strategies

5.1.2.1 Harvesting for Growth

Current population theory suggests that unless the carrying capacity (or zero growth population density) is declining, or removals exceed maximum potential growth rates, by harvesting at a fixed rate per annum, the population should respond by growing at least at that rate (see Appendix 4 for details). Thus, by removing at least 5% annually from established populations we are attempting to ensure that remaining animals in these populations continue to grow at least at this predetermined target rate. Harvesting also provides rhinos that can be used to set up new populations with the potential for rapid population growth. Thus harvesting is a win-win strategy, which should both maintain or enhance population vigour in the harvested population whilst also enhancing overall meta-population growth. Should rhino carrying capacity (zero growth density) change in populations being managed using set % harvesting, rhino densities should simply adjust to a new higher or lower level that can support the given % removal. On the other hand, a failure to reduce densities of populations approaching or above zero growth densities by at least 5%/annum is likely to negatively impact on habitat and ultimately reduce population growth rates to below minimum target levels. Thus:

- For established populations (especially large ones) that are showing a zero growth population density (or have exceeded 50% of estimated ecological carrying capacity), an annual minimum 5% harvesting strategy should be instituted.
- Actual removals from smaller populations would be determined by specific demographics and logistical requirements but still aiming to average at least 5% over a number of years or aiming to prevent the population exceeding 75% of estimated ecological carrying capacity.

5.1.2.2 Establishing New Populations

Follow IUCN, IUCN SSC AfRSG and SADC RPRC recommended best practices (see du Toit 2007 – downloadable link below and IUCN SSC African and Asian Rhino Reintroduction and Translocation Guidelines (available from the AfRSG webpage (www.rhinos-irf.org/afrrsg) & Rhino Resource Centre. Some salient points include:

- Establish larger populations, and wherever possible set up populations with a minimum number of 20 unrelated founder rhino (to maximize genetic diversity) with the potential to carry at least 50 animals.
- Provide suitable rhino habitat, within the former range of the subspecies.
- Do not stock with more than 40% of the estimated capacity for the area in question.

- Attempt to introduce the founders together in a distributed pattern as per the above guidelines. Where possible, use founders from several sources.
- The founder population sex ratio should ideally be skewed in favour of breeding females but not to the detriment of the donor population/s. In addition, the founders should be young breeding adults, avoiding sub-adults, calves and old animals.

5.1.2.3 Subspecies and Range Separation

To maintain the separation of the recognised black rhino subspecies/ecotypes in South Africa, the:

- Black rhino subspecies should NOT be mixed.
- Hard boundaries for subspecies have been proposed to guide management (see Fig. 3)
- Existing populations falling out of these guidelines can remain but all future initiatives should align with the guidelines.
- The single existing *D.b.michaeli* population in South Africa should ideally be repatriated to their former range. They should not be allowed to expand their range beyond their current ownership in South Africa. For this reason no national target has been set for this subspecies.

5.1.2.4 Additional Management to Promote Long-Term Genetic Viability

To maximise genetic diversity and reduce the possibility of inbreeding within the fragmented rhino populations:

- Every effort should be made to obtain as diverse array of founder animals as possible in newly established populations.
- Introduce 'new blood' by introducing an unrelated individual every generation (10 years) per population to established populations, but this is dependent upon the population size and demographics. The introduction of adult females is generally more successful given the aggression of adult males.
- In small populations adult male swaps may be successful, and in populations with two adult males, removing the dominant male should be considered every generation.

5.1.2.5 Surplus Males

In the context of managing black rhino populations, notably smaller ones, the demographic skewing of the population sex ratio in the favour of males is likely to occur. This can have a negative impact on the population's breeding performance and genetic status. These bulls are commonly known as 'surplus males'. Thus:

- The surplus male problem is addressed through a number of means such as translocation, establishing male only groups, and hunting.
- The hunting of black rhino males is managed via a strict permit application process under the auspices of the national Department of Environmental Affairs who currently allocate the hunting tags up to the maximum CITES approved quota of five animals per year (the same as Namibia). This process has the support of CITES and the AfRSG. An RMG working group also developed a set of assessment criteria to ensure that only proposed hunts that will enhance demographic and/or genetic conservation should be approved. Should evidence and further modelling indicate that this quota should be increased to more adequately deal with the surplus male problem given continued growth in rhino numbers, South African authorities should consider submitting a proposal to a future CITES Conference of the Parties (CoP) to increase the annual quota. (See Appendix 6 for more details).
- As an alternative to hunting, establish male-only populations (preferably with young males that know each other) avoiding areas suitable and large enough for a larger breeding population.

- While it may not prove popular with recipient populations, consideration could be given for a limited period to “dumping” some surplus males into unoccupied areas in very large parks currently stocked well below ECC.
- Provide surplus males to intensive management institutions (Zoos and Safari Parks) worldwide in exchange for support of in-situ rhino conservation programmes. However, be aware that captive breeding institutions also have a surplus male problem and are trying to send males back to Africa.

5.1.3 Indicators of Success include:

- Meta-population growth of >5% (after allowing for exports/imports).
- Individual population growth of >5% (after allowing for removals and introductions).
- Other useful population performance indicators (some of these would be more effective in individually known versus incompletely known populations) such as (with yardsticks to achieve >5% population growth):
 - Inter-calving intervals (ICI) with an ICI of < 2.5-3.0 years considered good;
 - Age at first calving (AFC) with less than the average of 7.6 ± 1.5 (\pm SD) years considered good ;
 - Age & sex ratios such as the proportion of 1 year old calves in the population (with >8% considered good); % adult females calving per year with >30% of females calving per year considered to be acceptable;
 - Mortality rates of <4% for the whole population, <10% for <1 year olds and <5% for sub-adults (A-D age classes). Post release rates in the first year of <10.8% would be above average, while capture/boma related mortality rates should not >9% of this activity.
- Number of new populations established & rhinos translocated;
- Number of populations with genetic supplementation in last 10 years.
- Number of surplus males hunted versus number of applications.

5.2 POPULATION MONITORING

5.2.1 Objective

To obtain accurate and precise information on black rhino population performance to inform decision making.

5.2.2 Actions/Strategies

The following actions/strategies are proposed to obtain accurate and precise information on black rhino population performance to inform decision making:

- Monitor black rhino population sizes and demography ideally every year. Minimum data required includes::
 - Number of animals;
 - Demographic information in line with RMG status reporting format such as sex ratios (using standard AfRSG/RMG age classes), age of first calf, ICI etc.
 - Mortality rates (natural and other (illegal, capture, hunting, exotic disease etc));
 - Spatial distribution;
 - Removals & introductions;

- Establish & maintain a population monitoring database.
- The monitoring methods to be determined by the size of the population, resources available and habitat, such as:
 - Individual population monitoring in small populations through the use of identification techniques such as ear notching, etc.;
 - Statistical estimates or sub-sampling in larger populations such as mark recapture or block counts;
- Use AfRSG/RMG approved standardised monitoring procedures & protocols e.g. the standardised continental A-F ageing system, condition assessment categories, population estimates.
- Produce and submit reports as specified by the RMG on an annual basis.
- Funding permitting RMG to coordinate (at least every four years) a comparative synthesis and analysis of the data in these individual reports

5.2.3 Indicators of Success include:

- Annual population estimates (preferably accurate to +/- 10%) produced for each population.
- Status reports produced annually by all parks/ private land.
- Status report summary reports produced at least every four years by the RMG.

5.3 PROTECTION

5.3.1 Objective

To minimise the losses of rhinos through illegal activity.

The following actions/strategies are proposed to minimise losses of rhinos through illegal activity:

5.3.2 Actions/Strategies (see Appendix 5 for details)

5.3.2.1 Field Law Enforcement

- Secure the reserve with an adequate law enforcement focused staff component.
- Develop adequate ground surveillance, detection and reaction capabilities e.g. through patrol planning & implement patrolling strategies/plans, inclusive of debriefing. In smaller reserves staff the reserve at the very least at the level of one field ranger per 10 km², while in large reserves minimum ranger numbers should be equal to or exceed the square root of reserve area (in km²) e.g. a 500 km² reserve should have >22 rangers.
- Train and motivate staff effectively in anti-poaching procedures.
- Secure funding for ongoing ground surveillance and all law enforcement.
- Ideally establish a specialized anti-poaching unit.
- Equip staff adequately.
- Ensure appropriate boundary fencing, maintenance & checking done in accordance with fencing plan (where fences exist).
- Ensure adequate communications for coordination of patrols and reaction to incursions.
- Establish & maintain support networks with other law enforcement agencies.

5.3.2.2 Neighbouring Communities

- Implement an effective community liaison programme.

5.3.2.3 Intelligence

- Develop & implement an intelligence gathering programme.
- Integrate intelligence and information at national scale (see Appendix 5)
- Alert and brief all relevant conservation and security organisations in the RMG region following protocols recommended by RESG/Interpol ECWG

5.3.2.4 Investigate & Prosecute Illegal Rhino Activities

- Develop and implement a scene of crime and incident tracking/investigation standard operating procedures from incident to prosecution.
- Refer to SADC RMG Scene of Crime, investigators handbook resources.
- On discovering a rhino poaching incident the officer in charge of the reserve should be alerted immediately. The poaching scene should be secured, minimising disturbance to the area. The discoverer, as with all staff, must know and be reminded not to touch or disturb anything in an area around the crime scene until a qualified investigator arrives.
- To maximize chances of successful prosecution it is important to maintain chains of evidence for all exhibits (as trained in Scene of Crime management).
- Law enforcement (e.g. SAPS) & National Prosecuting Authorities (NPA) to use experienced wildlife crime investigators and prosecutors in rhino related cases to improve the chances of successful convictions. In addition expert witnesses should be used to argue in aggravation of sentence to try to ensure that deterrent sentences are handed down to those convicted of rhino crimes.
- Consider using dedicated environmental courts to handle rhino related cases.
- Conservation Agencies to give more priority to having sufficient experienced crime investigators on their staff.
- Encourage greater cooperation between Provincial and National conservation law enforcement and prosecuting agencies/authorities to improve information sharing, tracing and prosecution of rhino related crimes.

5.3.2.5 Secure and Monitored Rhino Horn Stockpiles

- Develop and implement standard procedures for recovering, securing, marking (physical/transponder) and monitoring rhino horn as recommended by TRAFFIC (See Milledge 2005). All stocks to also have DNA samples taken and submitted for inclusion in the RhoDIS database.
- Establish & maintain a rhino horn database (one available from TRAFFIC).
- Cooperate with national & provincial authorities in regulation and monitoring of rhino horn stocks.

5.3.3 Indicators of Success include:

- Number of rhinos lost/injured through illegal activities (poaching, snaring, darting etc), measured in relation to patrol effort.
- Other useful indicators include:
 - The proportion of rhino poaching and illegal dealing of rhino horn cases which result in arrests and convictions.
 - The average sentence for those convicted of poaching and illegal dealing of rhino horn does not decline below current levels.
 - Law enforcement budgets relative to rhino population.

- Proportion of illegally killed rhino carcasses.
- Number of private owners with declared and registered stockpiles increasing.
- The ratio of the number of horns recovered in relation to the total number of known illegal horn in circulation (based on known thefts from carcasses and stockpiles).

5.4 HUMAN RESOURCES

5.4.1 Objective

To ensure that sufficient and appropriate human resources and skills are available and deployed efficiently

To effect the above objective, the following actions/strategies are proposed:

5.4.2 Actions/Strategies

- Develop the skills (staff & training) requirement for the protected area in question
- Conduct a skills audit and establish & fill the skills-gap.
- Make use of available training resources from the AfRSG, RESG/Interpol ECWG and RMG, such as: anti-poaching field ranger security training; rhino ID-based monitoring training; scene-of-the-crime techniques; RHINO mark-recapture; block count population estimation; rhino database management; Wildlife Investigator etc.
- Review & develop career paths to ensure adequate law enforcement experience and opportunities.
- Attempt to secure sufficient funding to meet requirements.

5.4.3 Indicators of Success include:

- Proportion of skills-gap filled (staff & training).
- Proportion of required resources secured.

5.5 CO-ORDINATION OF CONSERVATION MANAGEMENT ACTION

5.5.1 Objective

To have effectively co-ordinated black rhino conservation management.

5.5.2 Actions/Strategies

To have effectively co-ordinated black rhino conservation management, the following is required:

- Department of Environmental Affairs (DEA) to coordinate & monitor the implementation of this plan.
- Formalize the status and functions of the South Africa membership of the SADC RMG as the coordinating group for this plan defining its roles, procedures, membership, meeting schedule, as well as links with other coordinating/advisory groups such as the SADC RMG, IUCN SSC AfRSG, law-enforcement groups/bodies (National Wildlife Crime Reaction Unit & the RESG/Interpol ECWG) etc.
- Every conservation organization & private owner managing black rhino to develop and implement a rhino plan in line with this national plan.
- Every effort should be made to coordinate national efforts in rhino conservation. Current security threats call for concerted national efforts in this regard ranging across the national-provincial conservation estate through to the private sector (see Appendix 5).

5.5.3 Indicators of success include:

- Acceptance of the rhino plan by DEA.
- Provisional/conservation organization/private rhino plans in place & implemented.
- SADC RMG to meet regularly, with minuted and implemented resolutions.
- Assessment of progress towards targets at least every two years.
- Review of plan every ten years.

5.6 ECONOMIC AND SOCIAL SUSTAINABILITY

5.6.1 Objective

To ensure that support (political and public) for black rhino conservation in South Africa is in place and fostered through multiple and innovative initiatives to improve the actual and perceived value of the species

5.6.2 Actions/Strategies

To further the value (actual and perceived) of black rhinos amongst South African society will require the:

- Need for the flagship status of rhinos to be reaffirmed by clearly demonstrating the interdependency between human welfare and sustainable management of wildlife resources.
- Need to lobby and educate politicians to maintain the funding levels necessary to maintain capacity and management standards by demonstrating the tangible benefits of rhino conservation (especially with resource economic and social upliftment and empowerment arguments following from conservation activities).
- Promotion of the importance and opportunities presented by black rhino conservation in the sub-region.
- Encouragement of the sustained 'consumptive' and 'non-consumptive' use of rhinos (with appropriate monitoring and controls in place), and develop the means by which rhinos help pay for the cost of their conservation.
- Development of incentives, build capacity and empower land-owners and communities in their establishment and management of rhino populations.
- Development of support for rhino conservation through actively pursuing awareness programmes aimed at highlighting the benefits and advantages of black rhino conservation.

- Exploration of alternative means to enhance the commercial and existence value of black rhinos (such as a regulated rhino horn trade), especially if these might at the same time also reduce the illegal demand for rhino horn and poaching. The regional significance of such an activity would require extensive national and international consultation and cooperation.

5.6.3 Indicators of Success include:

- Budgets for rhino conservation increasing.
- Political & social perceptions of rhino conservation improving.
- Ease with which new rhino re-introduction projects are accepted by authorities.
- Number of rhino populations with community participation in management or part/total ownership.
- Number of educational/tourism opportunities that use rhinos (e.g. documentaries, EE programmes etc) as an educational/tourism tool.
- Number of rhino training packs distributed or developed (e.g. SADC RPRC rhino cards, BRREP).
- Numbers of rhino on community owned land increasing.
- The submission of a down-listing proposal or proposals (depending if separate proposals are submitted for black & white rhinos) to trade in rhino horn to CITES and its/their approval at a CITES Conference of the Parties.
- If the above proposal to trade in horn was approved by CITES, a nationally or regionally accepted protocol for the trade in horn should be in place.

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APPENDIX 1: SADC RMG AND OTHER RHINO CONSERVATION GROUPS

SADC RMG

The Rhino Management Group (RMG) was founded in 1989 by South Africa and Namibia. Since then Swaziland and Zimbabwe have also joined. Since 2001 The Rhino Management Group (SADC RMG) has fallen under the SADC political umbrella and comprises representatives from each of the following bodies:

State conservation agencies in South Africa, Namibia, Swaziland and Zimbabwe:

South Africa:

- Department of Environmental Affairs (DEA)
- Eastern Cape Parks
- Ezemvelo-KZN-Wildlife
- Free State Department of Tourism, Environmental and Economic Affairs,
- Gauteng - Department of Agriculture, Conservation & Environment - Directorate of Nature Conservation
- Limpopo Department Economic Development, Environment and Tourism– Chief Directorate – Environment
- Mpumalanga Tourism and Parks Agency,
- Northern Cape Department of Environment & Nature Conservation,
- North West Parks and Tourism Board;
- South African National Parks (SANParks)
- Cape Nature

Namibia:

- Namibian Ministry of Environment and Tourism including National Rhino Coordinator and manager of Custodianship Programme

Swaziland:

- Big Game Parks of the Kingdom of Swaziland

Zimbabwe:

- Zimbabwe Parks and Wildlife Management Authority

Private owners of free-ranging rhinos in South Africa:

- Until recently one member represented the joint interests of private owners, but at the last RMG meeting in November 2010 a number attended as observers. Representation on the RMG is to be increased with regional representatives being appointed. Community black rhino custodians are also to be invited to be represented on the RMG.

Elected rhino experts

The Chair of the Rhino and Elephant Security Group of Southern Africa/Interpol Environmental Crime Working Group (RESG/Interpol ECWG)

The SADC RMG's role is to further regional cooperation amongst rhino range states in the region dealing with similar issues of meta-population management, and to assist the various conservation agencies and private landowners in achieving the conservation goals for black rhino.

As all the Provincial State Conservation Agencies in South Africa, SANParks and the South African private black rhino owners each have a representative on the SADC RMG – the RMG is ideally suited to manage and update the South African black rhino plan, which it has done since 1989. The first RMG black rhino conservation plan was released in 1989 and a revised second edition was produced in 1997. This version represents an extensively update and revised third edition of the plan.

The SADC RMG's strategies include the following.

- Evaluate the performance and management of each black rhino population in the region at regular intervals based on the annual RMG status-reporting programme.
- Identify problems or information needs affecting the achievement of the goals for black rhino in each country.
- Initiate, develop and coordinate appropriate programmes (meetings, workshops, projects) necessary to provide management advice and to develop appropriate conservation strategies to achieve the goals.
- Evaluate project proposals and make recommendations to relevant bodies.
- Provide advice on request to conservation agencies.
- Liaise closely with all relevant conservation authorities and funding agencies
- Manage the Conservation Plan for the Black Rhinoceros in South Africa (SA membership of RMG only), by collecting, analysing and interpreting the information it requires, by keeping it updated and ensuring its continued relevance, and by publicising the results of these activities in appropriate ways.

Other Rhino Conservation Groups

IUCN SSC African Rhino Specialist Group (AfRSG)

This was reconstituted in 1991, with a continental scope, following a period during which it was amalgamated with the African Elephant Specialist Group. As one of more than 100 specialist groups within IUCN's Species Survival Commission, the mission of the AfRSG is: *"To promote the long-term conservation and maintenance of viable populations of the six subspecies of Africa's rhinos in the wild"*.

The AfRSG comprises a Chairman, a partially-funded Scientific Officer, representatives of most African rhino range states and a variety of rhino experts who operate as a network to address both strategic (e.g. government rhino policy) and implementation challenges for rhino conservation, ensuring that the best scientific knowledge is used as the basis for decision-making and field conservation programmes. To achieve this, meetings attended by the 30-40 members are held every two years, and in addition individuals or groups of members are assigned to contribute to important international, regional and national initiatives where their expertise is required. The value of the face-to-face nature of the exchanges helps establish a sense of belonging to a serious and relevant professional peer group, which strengthens the confidence and influence of government rhino conservation managers in particular. The AfRSG Chairman or individual members may be approached by any range state wishing technical

support or advice. Further details of the AfRSG's role are provided on the AfRSG's web page www.rhinos-irf.org/afrrsg.

The AfRSG, together IUCN's Asian Rhino Specialist Group and TRAFFIC currently has a mandate under CITES Resolution 9.14(rev), to on behalf of Range States, prepare and submit a summary report on rhino conservation for consideration at CITES CoP's.

SADC Regional Programme for Rhino Conservation (RPRC)

From 1999-2005 Phase I of the SADC RPRC was funded by the Italian Government and has now come to an end. Phase I of this programme was run by a consortium of SADC FANR, WWF SARPO, IUCN SSC AfRSG, CESVI (an Italian NGO) and IUCN ROSA. The programme provided expertise, specialized logistical support, training and catalytic funding for a wide range of projects of a regional nature or importance. The SADC RPRC Phase I helped bridge the gap between the high level umbrella strategy provided by the AfRSG and programme implementation by range states, by providing technical and financial support for a variety of regional projects.

A Phase II concentrating on promoting a regional strategy for rhino conservation that is orientated towards SADC development policies with a specific focus on cross boundary translocations and rhino re-establishment in minor and former Range States within SADC was proposed. However no funding has been forthcoming for this initiative and at the time of writing the SADC RPRC is not operational. .

SADC Rhino Recovery Group (RRG)

A SADC Rhino Recovery Group was established by the SADC RPRC in 2001 (as a sister group to the SADC RMG) to place particular emphasis on the management needs of 1% of Africa's rhinos that are in the minor range states and where there is considerable scope for re-introduction projects and population expansion (Zambia, Botswana, Malawi, Mozambique, Tanzania, Angola). The RRG's aim was: *"To coordinate and facilitate the application of regional resources in establishing re-introduced rhino populations and managing remnant rhino populations, and ensuring their future viability"*. However, to date the RRG has achieved little and been largely ineffective. It had been proposed that its role would be taken on by a refocused SADC Regional Programme, but this has not happened and at the time of writing the RRG is not operational.

At the time of writing it appears that the RRG is likely to disband and be absorbed into the SADC RPRC which in its Phase II is set to focus on cross boundary support and translocations into RRG countries. It also makes sense for such a ybody focusing on regional translocations to also include the major SADC RMG countries with extensive rhino conservation experience and capacity and which are to source of founder rhino for re-establishment projects in other countries.

Terms of reference for Phase II of the SADC RPRC have been designed to be complimentary to and not duplicate the work of longer established bodies such as IUCN's AfRSG, SADC RMG and SADC RESG.

Rhino and Elephant Security Group/Interpol Environmental Crime Working Group (RESG/Interpol WCWG)

The Rhino and Elephant Security Group grew out of a Security Sub-committee of the SADC RMG. It was formed in 1989 and met regularly till 1998 when it became dormant. The group was re-launched in 2001 with new, more focused terms of reference. It also came under the SADC framework. Since 2001, to save on costs and increase sharing of information, the RESG held back to back meetings with

Interpol's sub-regional Environmental Crime Working Group. The two groups recently decided to merge to form the RESG/Interpol ECWG. The overall objectives of the group are to develop guidelines, strategies and databases for the effective and efficient protection of African rhino and elephant populations, to assist the various conservation agencies, communities and private landowners to minimise rhino and elephant poaching and the illegal trade in rhino horn and ivory, and to provide advice, training and coordination. The group also promotes procedures for effective investigation and prosecution of rhino and elephant crimes. Membership comprises representatives (usually wildlife investigators or managers) of rhino conservation management agencies, specialist police units, including Interpol Environmental Crime NCB representatives, and co-opted specialist technical members as required (e.g. from TRAFFIC, AfRSG, etc). To save on costs and increase sharing of information, RESG meetings have, since the group's re-launch, been held back-to-back with regional IECTG meetings.

Provincial Rhino Committees

Ezemvelo-KZN-Wildlife has a long established Rhino Management Group that meets regularly. Its Chair is also a specialist member of the AfRSG and he is also a member of the SADC RMG.

SANParks also has its own Rhino Management Committee chaired by the Exec. Director of Conservation Services Division. They meet twice a year.

APPENDIX 2: ADDITIONAL INFORMATION ON BLACK RHINO TAXONOMY IN SOUTH AFRICA

The following text is largely taken from a draft of Emslie & Adcock's (*in prep*) black rhino species review which will appear in the next edition of Jonathon Kingdon's *Mammals of Africa*.

- Groves (1967) described seven subspecies of black rhino; but this classification has been questioned, as it was based on small sample sizes (du Toit 1986), and was not supported by a preliminary analysis of data from more skulls (du Toit 1987).
- A proposal from a 1986 African Rhino Workshop in Cincinnati was adopted by the first IUCN African Elephant and Rhino Action Plan (Cumming *et al.* 1990), resulting in the recognition of four black rhino ecotypes or "subspecies" conservation units (Cumming *et al.* 1990). Since then IUCN Species Survival Commission's African Rhino Specialist Group has recognized these four subspecies in different areas (Emslie & Brooks 1999): southern-central (*Diceros bicornis minor*); south-western (*D. b. bicornis*); eastern (*D. b. michaeli*) and western (*D. b. longipes*) Black Rhino. Only two of these subspecies – the southern-central (*D. b. minor*); south-western (*D. b. bicornis*) are indigenous to South Africa; and the western black rhino is recently feared extinct.
- Historically the boundaries between the three remaining subspecies were not "hard-edged" in contrast to the markedly discontinuous range of the two white rhinoceros *Ceratotherium simum* subspecies. However, there are major differences in the habitat and climates in the core areas of the four subspecies, and it is likely that each has specific genetic or behavioural adaptations to the environment. Some conservationists have preferred to refer to the black rhino subspecies as ecotypes due to the contiguous distribution of three subspecies and perceived limited genetic differences between them (Lloyd *in litt*). However, recent genetic analyses indicate that the southern-central, south-western and eastern black rhino are sufficiently distinct to support the current subspecies distinction (Harley *et al.* 2005). Genetic variation in mitochondrial DNA of *D.b.minor* (from Zimbabwe animals) and *D.b.michaeli* (from East Africa) revealed that these two subspecies represent separate ancestral lineages, which diverged between 0.93 and 1.3 million years ago (Brown & Houlden 2000). These genetic studies support the currently recognised subspecies.
- Controversy also surrounds the use of formal subspecies nomenclature and determination of former ranges, with Rookmaaker (2005) arguing that given current accepted subspecies distributions, *D.b.minor* and *D.b.michaeli* should be re-named *D.b.keitloa* and *D.b.brucii* respectively. In addition *D.b.bicornis* has been described as being restricted to the Western Cape and further north, at least to the middle of Namibia, and is believed to have gone extinct (Ansell 1974, Rookmaaker & Groves 1978) leading to a questioning of the use of the subspecies name *D.b.bicornis* to refer to the animals derived from the surviving arid-adapted animals from northern Namibia (Hopwood 1939, Groves 1967, Lloyd *in litt* and Rookmaaker 2005). However this view has been challenged. It has been argued that the animals from northern Namibia can be amalgamated with those in the Western Cape and Southern Namibia which died out (du Toit 1987, Hall-Martin 1985), on the basis that 1) the largest skulls du Toit (1987) measured were from northern Namibian animals which was in keeping with Rookmaaker and Groves' (1978) description of *D.b.bicornis* in the Western Cape and Southern Namibia as a "very large rhino"; and 2) on the ecological similarities between the earlier postulated range of *D.b.bicornis* and that of extant Namibian rhino (Hall-Martin 1985). Further evidence supporting this amalgamation, comes from an old map of Greater Kudu (*Tragelaphus strepsiceros*) distribution in Namibia (Shortridge 1934) which shows this species had a contiguous distribution along the Molopo, Nossob, Oliphant, Auob, Great Fish and Orange Rivers (i.e. all the way to the south of the country and well into the supposed range of *D.b.bicornis*). Dietary overlap (for both species and size classes) between Kudu and Black Rhino can be quite considerable (Macfarlane 1997, Breebaart *et al.* 2002); and it has been noted that where Greater Kudu generally do well,

Black Rhino normally also thrive. For these reasons Emslie suggests it is quite possible that at one time there may have been a continuous distribution of black rhino from northern Namibia all the way to the Western Cape supporting the current use of the *D.b.bicornis* subspecies name (although much of the clinal genetic variation in the southern part of the range will have been lost).

- As explained in the plan the stipulated boundary between the south-western and southern-central subspecies' in Cape in the past was a somewhat arbitrary practical construct which primarily used rainfall to differentiate between more arid adapted south-western black rhino areas and wetter southern central black rhino areas in the country. However, problems with previous putative subspecies distributions were highlighted by Skead et al (2007), Knight et al. (in prep), Mike Knight and Dave Balfour (personal communication) who indicated that the Transkei was probably an extra-limital area which formed a barrier to north south rhino movement between the Eastern Cape and KwaZulu-Natal. Following consultations, it was decided to factor in the probable effect of the "Transkei Gap" in determining likely subspecies distributions. As a result the wetter east of the Eastern Cape up to the Kei river has now been defined as *D.b.bicornis* range (with this subspecies spreading into this area from the west); given that it is now thought unlikely that *D.b.minor* could have expanded its range southwards through the Transkei area of northern Eastern Cape.

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APPENDIX 3: POPULATION AND SUBSPECIES TRENDS SINCE 1989

Previous versions of the South Africa black rhino conservation plan have always included tables of estimated numbers of rhinos by population by year broken down by subspecies and management authority. However, given that some private owners do not want to widely publicise their numbers and population names; these numbers can be found in the confidential RMG status report summary reports, and to give more focus on the main trends since 1989; these tables have been replaced by some summary graphs (Figures 1-5) and a Table 1 showing the current status and trends in overall numbers of rhinos and populations overtime broken down by subspecies, organisation and management type. These graphs have primarily been based on data supplied to the RMG as part of status reporting and analyses in RMG Status Report Summaries as well as to the IUCN SSC African Rhino Specialist Group. Details pertaining to the Figures and Table are within the captions to each as required.

	<i>D.b.minor</i> Dec-10	<i>D.b.michaeli</i> Dec-10	<i>D.b.bicornis</i> Dec-10	Total
Eastern Cape	160		9	169
KwaZulu-Natal	368			368
SANParks	683		100	783
Limpopo	20			20
North West	127			127
Free State	3			3
Private - Owner	212	60	62	334
Privat - Cust.	111			111
Total	1684	60	171	1915

Table 1: Numbers of black rhino conserved by management agency/private sector by subspecies as of the end of 2010

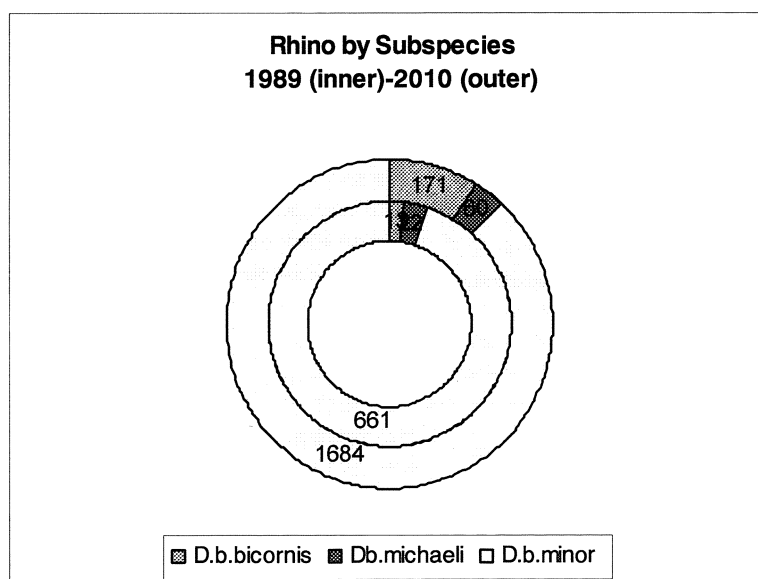


Figure 1: Changes in numbers and proportion of black rhino conserved in South Africa by subspecies since the formation of the RMG in 1989. Note how numbers of all subspecies have increased significantly. South Africa is the major stronghold for *D.b.minor*, conserving just over three-quarters (76.0%) of this subspecies in December 2010 (as well as 8.9% and 8.1% of Africa's *D.b.bicornis* and *D.b.michaeli* respectively). While the proportion of total rhino made up of *D.b.bicornis* and *D.b.michaeli* has increased since 1989, the vast majority of black rhino in the country continue to be *D.b.minor*.

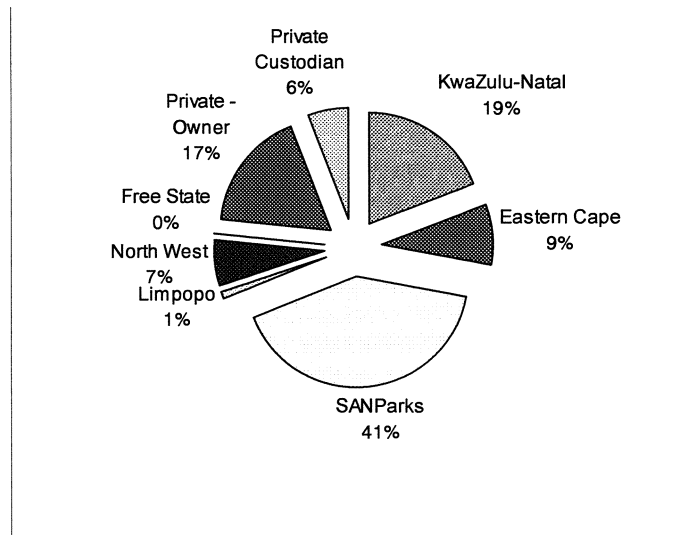


Figure 2: Proportions of the most numerous black rhino subspecies (*D.b.minor*) conserved in reserves run by each management authority/private sector as of the end of 2010. While the majority of black rhino managed by the private sector are privately owned, an increasing number of *D.b.minor* are being managed under a custodianship agreement with Ezemvelo-KZN-Wildlife and more recently also Eastern Cape Parks and Tourism Agency as part of the EKZNWildlife/WWF black rhino range expansion project (BRREP). Ownership of founder rhino remains with the donor conservation agency, but with private custodians and the donor agency equally sharing the benefits of founders born in these populations.

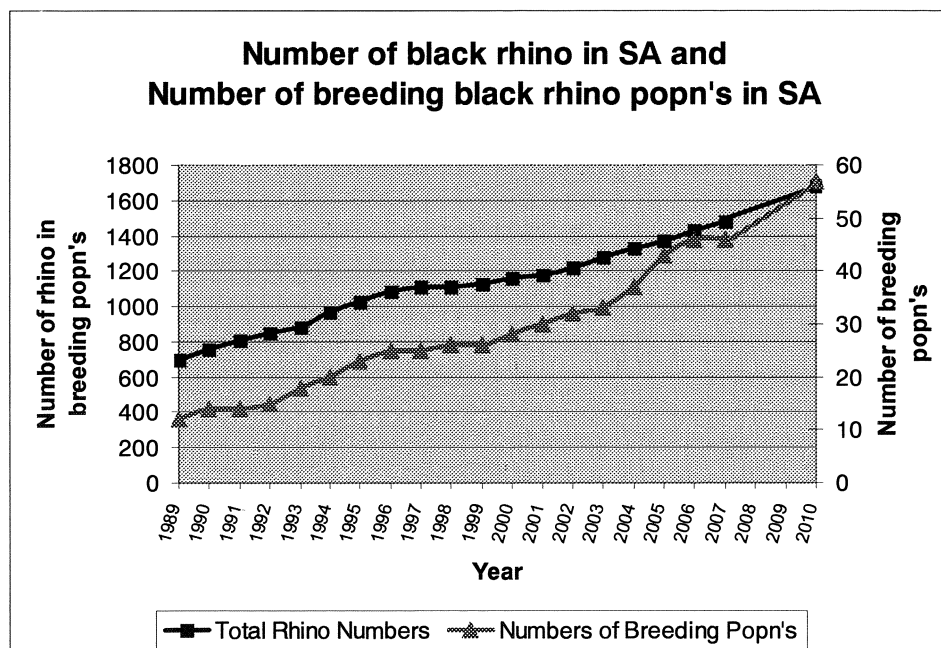


Figure 3: Graph showing the increase in numbers of black rhino in South Africa and in the number of breeding populations (all subspecies but excluding male only populations or populations of 1) since the formation of the RMG in 1989. Much of this increase has come about because of regular translocations to set up new breeding populations. With increased attention to biological management, performance recently appears to have improved in many but not all of the donor populations.

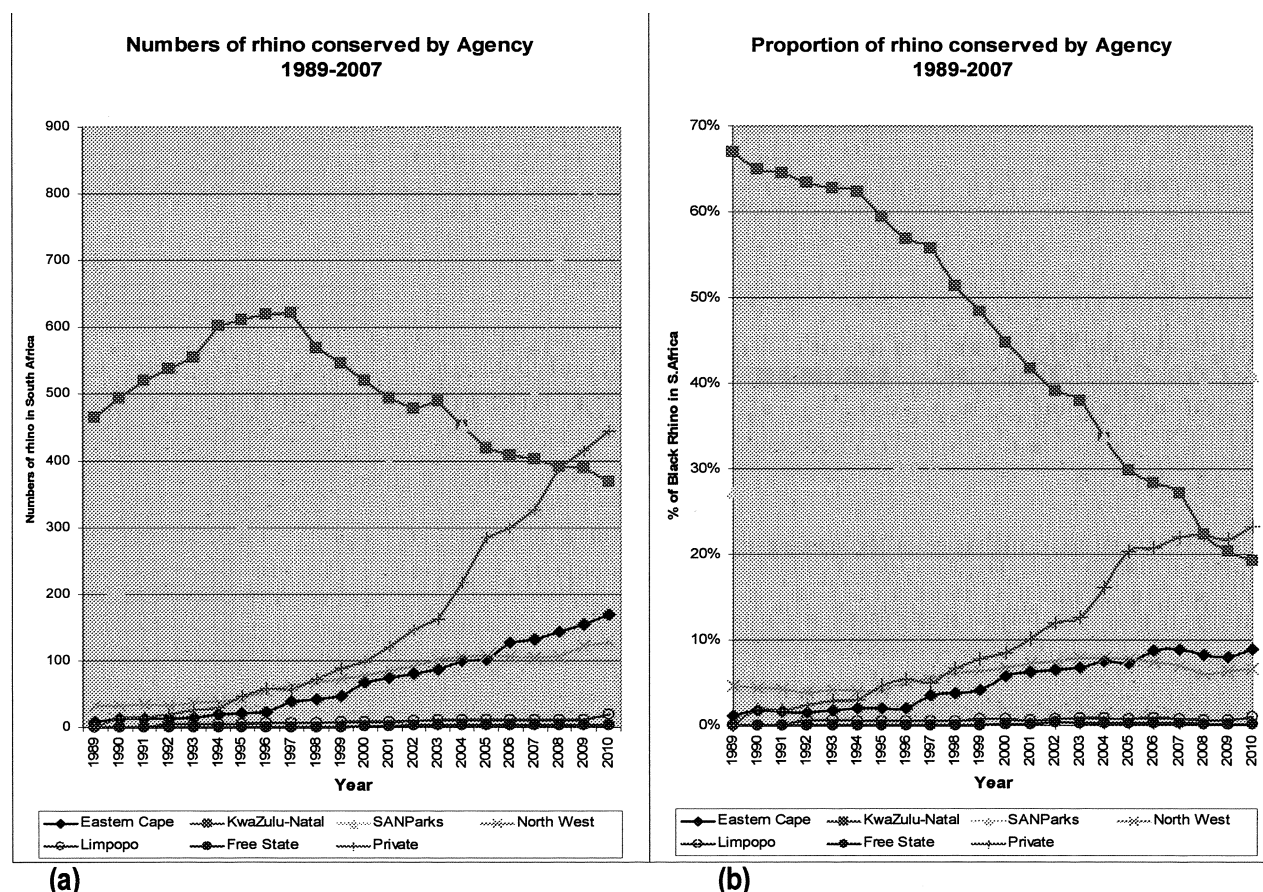


Figure 4. (a) Numbers of rhino and (b) Proportion of total rhino numbers conserved in reserves managed by formal conservation agency/private sector since the formation of the RMG in 1989. From 1989-2004 Ezemvelo-KZN-Wildlife (EKZNW) populations provided 260 black rhino to other (non-EKZNW) areas in southern Africa (Adcock 2005). These animals have increased in number, increasing numbers under management by other authorities and the private sector. This is one of the main reasons for the declining proportion of South Africa's rhino in EKZNW run reserves. Among five areas that received 224 of the EKZNW introductions from 1989-2004, and where subsequent population growth could be traced, by the end of 2004 there were 115 more *D.b.minor* than were introduced (Adcock 2005). The majority of *D.b.minor* rhinos in SANParks, E.Cape, NW, Limpopo, Free State and Private Sector are also derived from EKZNW founder rhino. KwaZulu-Natal has thus played a major role in helping increase overall black as well as white rhino numbers in the country. However, some of the decline in numbers in EKZNW reserves is also due to decreases in underlying performance of some established donor populations and declining ECC following negative habitat changes in its largest population. This may be due to a combination of rhino densities having been allowed to exceed or approach estimate ECC's in some areas in the late 1990's, increasing densities of competing browsers and/or changing habitat in some parks or selective removal from some areas or off specific age classes. This highlights the need to better understand the various factors affecting the underlying performance of established source black rhino populations, so as to enhance biological management decision-making and translocations in future. Some of the apparent decline in performance in EKZNW's largest population may also have been due to a possible upward bias in some past population estimates. Performance has increased in some but not all of these EKZNW donor populations following increased removals and research is underway to try to understand why some areas in one Key donor population in KZN have to date not positively responded as expected to increased removals unlike other areas. The spike in SANParks numbers is due to the adoption of improved population estimation methods in its largest population and the prior use of more conservative estimates for this population. Numbers in the private sector and E.Cape have been steadily increasing.

APPENDIX 4: HARVESTING STRATEGY

While the national population was in a recovery stage, and in order to increase the size of the South African national herd for black rhino as rapidly as possible the RMG initially advocated the objectives of both promoting the number of viable populations of the species, as well as maximizing individual population growth (Emslie 2001). This approach relied upon the central caveats of:

- A good understanding of the potential of each rhino area to support black rhinos with estimates of the ecological carrying capacity (ECC) (better referred to as zero-growth density).
- Reliable population estimates, and
- The assumption that harvesting at 75-80 % of the zero-growth density would provide a maximum sustainable yield for the species. This would only be advocated in populations approaching the estimated zero-growth density.

Although this approach was implemented in a number of reserves for a number of years, uncertainties around the estimated zero growth density (with all its complications associated with fluctuations in population size in time & space), unreliability in population estimates and the fear of possible over harvesting of populations however led to a general discomfort with this approach.

This led to an alternative approach referred to as the constant harvest strategy (Goodman 2001). This approach proposes the use of a set harvesting rate (a minimum average of 5% of the population/year in established populations stocked over 50% of estimated ECC) which is set below the estimated intrinsic rate of increase for black rhinos (between 8-9%). This in itself provides a safety net and is a self correcting strategy as it relies on a proportion of animals being removed as opposed to a previously set (estimated) number of animals. Application of the strategy must be adaptive in nature with accurate monitoring of the population, with the set removal strategy applied for at least five years to see its effect followed by a review and adjustment as required. Variations in the strategy such as the implementation of the set removal once the population had been reduced to about 70% of its ECC were contemplated (see Brett et al. 2001). The advantages of the set harvesting rate include:

- It does not require an accurate estimate of the ecological capacity for black rhinos, thus removing any controversy around this idea.
- It does not require knowledge of the maximum sustained yield for the population.
- It is a simple and applicable concept for management.
- Small more regular removals from a population would pose less of a threat than fewer larger ones if there were overestimates of the ECC.

In smaller populations consideration can be given to either taking a bigger percentage removal once every few years (averaging 5%/year) or by seeking to keep populations at or below 75% of ECC and monitoring performance in case ECC may have been over or under estimated.

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APPENDIX 5: NATIONAL STRATEGY FOR THE SAFETY AND SECURITY OF RHINOCEROS POPULATIONS IN SOUTH AFRICA

Part A: Introduction and Background

1. Introduction

This strategy has been necessitated by a drastic increase in the number of incidents of rhino (rhino) poaching in the country and the continued leakage of certain horn stocks into the international illegal trade. This has raised concern with conservation bodies, private landowners and attracted international attention including media coverage worldwide, and increased the focus on South Africa at the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

South Africa has a proud track record of successful rhino conservation. The figure below shows how numbers of rhinos in the country have steadily been increasing. At the end of 2007 South Africa conserved 35% of Africa's black rhino in the wild and 93% of the continent's white rhino. To date the rhino populations have grown at a healthy annual 5% growth rate, with the total rhino population for the country estimated to be close to 21,000 by 2010 (Fig. 1).

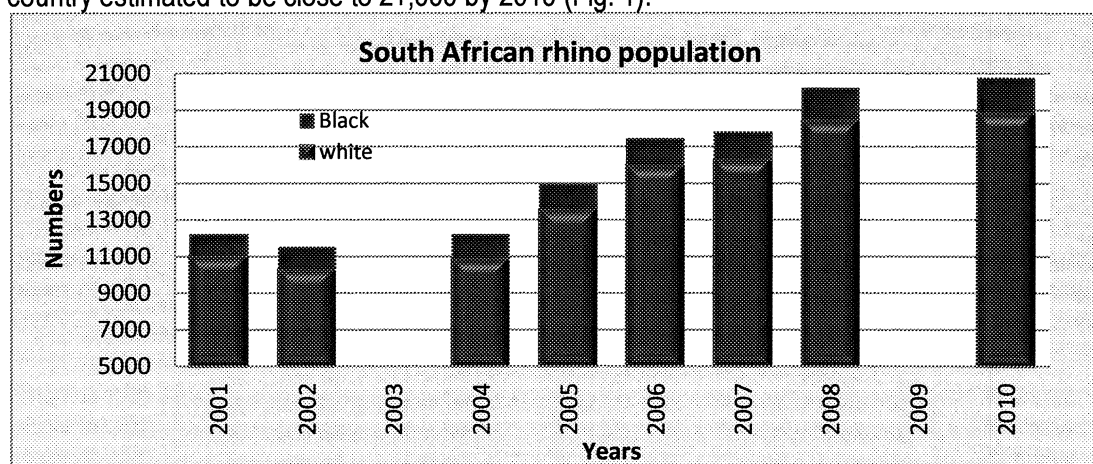


Figure 1 Rhino numbers in South Africa 2001 – 2010 (Based on data from the IUCN Species Specialist Commission's African Rhino Specialist Group M. Knight *in litt.* 2011)

Over the years there have also been various successful breakthroughs in rhino poaching investigations by the many law enforcement agencies. Until relatively recently, thanks to these law enforcement efforts, poaching of rhino had been kept under control and held at relatively low levels. However from 2008 onwards rhino poaching has escalated at an alarming rate as has the leakage of both legal and illegal rhino horns held in the various private and government stockpiles with no indication of decreasing.

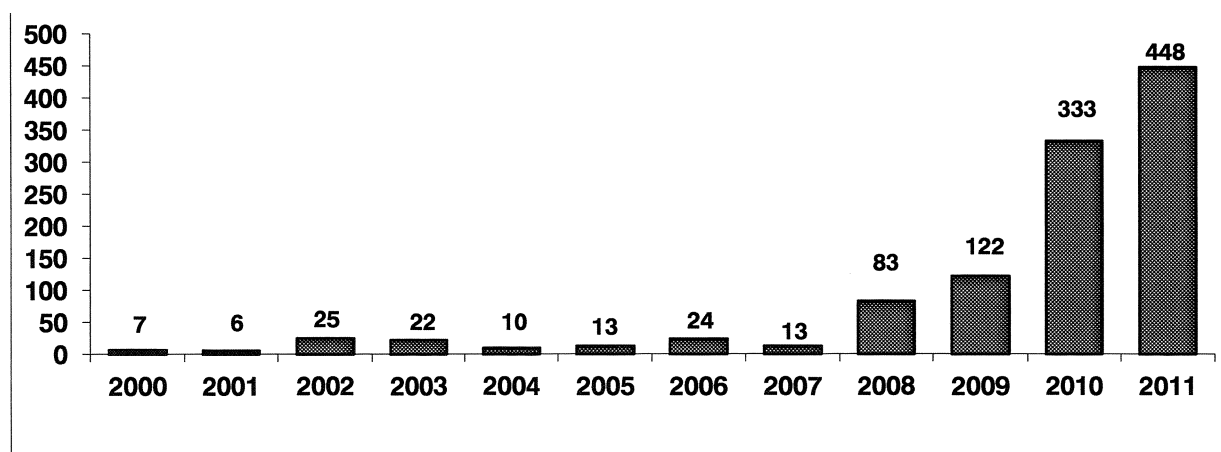


Figure 2 Rhino poaching incidents recorded for SA 2000 – 2011

The brunt of the rhino poaching onslaught over the years has been borne largely by the Kruger National Park (KNP), managed by South African National Parks (SANParks), and the provincial reserves under the management of Ezemvelo KZN Wildlife (EKZNW). Since 2000 the KNP have lost a total of 207 animals and EKZNW a total of 82 animals. The last two years, (January, 2008 through to June, 2010) has shown a dramatic spike in rhino poaching incidents in South Africa. All provinces except Western Cape and Northern Cape, have experienced an increased level of poaching activity. In 2008, 83 animals were poached and in 2009, 122 animals were poached, followed by 333 in 2010 and 448 in 2011, indicative of an exponentially increasing rate of poaching.

The modus operandi being utilised both locally and internationally in the illegal killing of rhino and the smuggling of their horns in recent years clearly indicates the increasing involvement of highly organised and well structured crime syndicates that are operating a lucrative international enterprise. In addition to the loss of horns through increased poaching, concerns have also been raised regarding “leakage” of South African horns onto the illegal international markets from stocks in the public and private sector. These syndicates are also involved in the “legal / unethical” hunting of rhino in the country.

When comparing the statistics on rhino population growth with the actual number of animals lost through poaching shown in the figures above, it is clear that current levels of poaching are not preventing South African rhino numbers from increasing. However the concern is that should poaching continue to escalate at the current rates, unabated, one could reach the situation where numbers start declining to a point when more animals are being poached than are born into the population – as has been experienced in other rhino range states in the recent past. A properly structured and concerted effort by government and other relevant role-player's, is therefore urgently needed to address this problem, as it poses a significant threat not just to the rhino population but also to the reputation, eco-tourism industry and public image of South Africa. This threat, if ignored, may consequently have a direct or indirect socio-economic impact on people employed at multiple levels in a number of local industries. It might also lead to international pressures to up-list South Africa's white rhino population from Appendix II to Appendix I at CITES which would have very negative consequences to the country.

This strategy is in line with the national white rhino strategy titled: *A strategy for the conservation and sustainable use of wild populations of southern white rhino Ceratotherium simum simum in South Africa* which was developed at a stakeholders workshop organised by the Rhino Management Group (RMG) and subsequently approved by Members of the Executive Council (MINMEC) meeting on the 29th February, 2000 (Publication of National Environmental Policies and Strategies No. 874, and approved for publication on the 13th June 2003). It is also in line with the National black rhino conservation plan (a

revision version of which is in final stages of revision by the RMG (on which the Department of Environmental Affairs (DEA), SANParks, Provincial Conservation Agencies, and the Private Sector are represented) before being submitted for ratification as a Biodiversity Management Plan under the National Environmental Management: Biodiversity Act (NEM:BA).

The objective of a security, protection and law enforcement strategy according to the national white rhino strategy should be to: *"Reduce the effects of poaching, and ensure the successful conviction and sentencing of rhino poachers and illegal traders"*. Rhino protection is also one of the six key components of the revised national black rhino conservation plan and its related objective is *"To minimise illegal activity and losses of rhinos, through appropriate management action, improved legislation and sentences, cooperative intelligence, detection, effective investigation and prosecution, law enforcement and community support"*. The rationale behind these objectives is that, *"the major threat to white and black rhino numbers is poaching and illegal trade in rhino horn. These must be minimised to sustain population growth and maintain the economic, tourism, social and community value/benefits of rhino"*.

Until recently there was also an unexpected problem with significant numbers of white rhino being suspiciously legally sport hunted by nationals from non-traditional hunting countries in the East. However, following a number of new legislative measures in South Africa and increased attention from police and wildlife investigators this legal hunting is no longer a major problem. Following the introduction of the new measures there has however been a marked reduction in rhino sport hunting. This unfortunately has coincided with a rather rapid escalation in rhino poaching activity. The question still remains however of how many illegal non-permitted hunts are still taking place within some of the private areas – hence there is a need to stay abreast of numbers and trends in private sector populations.

2. Application

This strategy is applicable to all relevant law enforcement and conservation agencies as well as private land owners, non-government bodies and communities involved in the management of rhino populations.

3. Purpose

To provide guiding principles to inform decision making processes, strategic planning and operations aimed at reducing the effects of poaching on rhino species and to ensure the successful arrest, conviction and sentencing of poachers, illegal traders and crime syndicates operating locally (at reserve level), nationally, regionally and internationally. The purpose is to also provide better controls and monitoring of rhino horn stockpile management and to promote improved management of the conditions under which rhino may be legally hunted.

4. Objectives

The strategy sets out to inform strategic planning and critical intervention strategies aimed at:

- Implementing an immediate action plan aimed at mitigating the current escalation in the poaching of rhino and the illegal trade in rhino horns;
- Securing the shared commitment of government (at national and provincial level), private land owners local communities and international stakeholders, as well as the necessary financial and manpower resources and political will to implement this policy;
- Supporting the establishment of a national coordination structure for information management, law-enforcement response, investigation and prosecution;
- Developing an integrated and coordinated national information management system for all information related to rhino species in order to adequately inform security related decisions;
- Investigating proactive security measures aimed at facilitating regulated and controlled international trade in the species, and any associated by-products.

5. What informs this strategy?

In the consultative process of developing this strategy reference is made to;

- International conventions that have been signed and ratified by the Government of South Africa and especially CITES;
- Existing legislation such as the National Environmental Management: Biodiversity Act No. 10 of 2004; (NEM:BA) and the National Environmental Management: Protected Areas Act No. 57 of 2003; (NEM:PAA); and
- The South African White rhino strategy and revised National Black Rhino Conservation Plan (currently near to being finalised for submission as National Species Plan under NEM:BA and building on previous RMG plans);
- National policy documents.

Part B: Principles

South Africa is internationally recognised as a significant international role-player in rhino conservation. This is due mainly to it currently conserving more rhino than any other country, the crucial role the country fulfils in the global conservation of rhino species and the shared commitment by the government, communities and private land owners in addressing the threat posed by the upsurge in poaching and smuggling of rhino horn. South Africa has also played a major role helping to re-establish rhino populations in other countries which had lost their rhino in the past. Mindful of this status the following principles are proposed, and the stakeholders:

(i) ...acknowledge that the focus of this strategy is on safety and security, as Biodiversity management plans for species are concurrently being revised, as part of a holistic approach to managing, utilizing and securing rhino populations in South Africa;

(ii) ...recognize that due to the unexplained increase in the demand for rhino horn in recent years, there has been a marked escalation in the threat to the security of rhino populations. Concerns have also been raised about significant numbers of horns flowing into the illegal market from other sources in South Africa such as illegal non-permitted hunts or illegal sale of privately owned horns. These threats are driven by sophisticated crime syndicates operating locally, nationally and internationally;

(iii)...accept that increased resources for financial and human capacity of the initiatives, backed by political will, are paramount to the success of any intervention or subsequent strategies;

(iv)...accept that positive interaction and relationships with communities, private rhino owners and other stakeholders backed up by effective communications structures, public awareness or education campaigns and incentive schemes facilitate effective and efficient information exchange;

(v)... support the development of a national organised environmental crime investigation unit under the auspices of the Department of Environment Affairs in conjunction with the South African Police Service (SAPS), National Prosecuting Authority (NPA) and all other relevant stakeholders;

(vi)...support the development of centrally coordinated national crime investigation and information management mechanisms, supported by law enforcement and conservation agencies and the private sector at all operational levels. This includes the development and maintenance of an integrated crime information database and national permit system by the Department of Environment Affairs;

(vii)...accept that an adequate number of highly motivated, well trained, resourced and equipped personnel, are the single most important factor ensuring the success of proactive and reactive operations aimed at countering rhino poaching;

(viii)...accept that research data, including rhino population census statistics and estimates, on public and especially private land (where information for many properties is currently not adequate and efforts to collate numbers are reliant on outside NGO funded surveys), and the movement of rhino around the country, are essential for the development of rhino protection plans. These plans inform threat and risk analyses which prioritize actions and ensure that resources are deployed effectively and also guide decision-makers in formulating or revising strategic conservation and utilization policies;

(ix)...adhere to accepted and lawful criminal investigation procedures under the auspices of the Environmental Management Inspectorate (EMI) which recognize that the successful apprehension, prosecution and neutralization of poaching syndicates relies on support from the SAPS, NPA, including the Asset Forfeiture Unit, South African Revenue Services (SARS), a sensitized Judiciary with Courts specialized in environmental crime and on the effective recruitment and management of informer networks;

(x)...recognise the need for Research and Development of new investigation techniques to improve the effectiveness of the safety and security efforts resulting in improved investigation methods and in a better understanding of the crime dynamics;

(xi)...recognise that monitoring and evaluation systems are essential to ensure that individual animals are monitored where possible, populations are securely maintained, law enforcement actions are effective in maintaining area integrity and that the National Safety and Security Policy to Counter Rhino Poaching in South Africa is being implemented as prescribed by the strategy and standard operating procedures;

(xii)...accept that for the successful implementation of any strategy an understanding of the end-user demand for rhino horn at the off-shore consumer level is required. Outcomes of this research will inform and may redirect emerging actions;

(xiii)...adopt a cooperative and supportive relationship with all recognized nongovernmental stakeholder groups engaged in the protection of rhino and the countering of the illegal trade in associated by-products.

PART C: Proposed Intervention strategies and/or activities

INTERVENTION

Strategy Outcome 1

Implementing an immediate action plan aimed at mitigating the current threat, to the rhino population, posed by the escalation in poaching and the illegal trade in rhino horns and associated by-products;

Strategies / activities

- Establishment of an interim National Wildlife Crime Reaction Unit (NWCRU) to respond to the current spate of wildlife crimes and more specifically the upsurge of rhino poaching and smuggling

of rhino horn. This unit should eventually evolve into a permanent NWCRU structure within the Department Environmental Affairs (hereafter referred to as "the Department");

- Obtain support for the establishment, and structure of the NWCRU from Provincial Conservation authorities including the South African National Parks (SANParks), South African Police Services (SAPS), National Prosecuting Authority and Provincial conservation agencies, mindful of the existing agreement prescribed in the document titled "Standard Operating Procedures for Cooperation between the Environmental Management Inspectorate (EMI) and the South African Police Services (SAPS)". The exact composition of the structure, interim criteria for staff appointment and skills set required are to be finalised after consultation between all stakeholders;
- Seek support for the secondment of appropriate and carefully vetted officials from the above mentioned government departments or institutions to the Department, to form an interim NWCRU to make an immediate impact on the current escalating illegal wildlife trafficking including but not necessarily limited to the upsurge of rhino poaching and rhino horn smuggling activities in South Africa;
- Conduct joint operations, law-enforcement actions and where applicable provide related assistance to provincial structures and private rhino owners;
- Establish a database and information sharing mechanisms for available information in respect of rhino poaching incidents in the country; and
- Conduct an extensive inter-departmental analysis of all available information, culminating in an accurate risk and threat assessment and identification of criminals;
- Convene regular meetings, information sharing discussions and workshops between government and private sector stakeholders;
- Promote cooperation, sharing and a common understanding of best practices on security, crime prevention, combating poaching, illegal or unethical practices and related environmental crime;
- Recommend interim minimum standards, specifications, operating procedures and protocols for security measures aimed at preventing poaching incidents;
- Identify and implement common community-based security and policing initiatives; and
- Provision of an adequate budget and sufficient skilled manpower for this unit to function effectively;
- A need to improve monitoring of rhinos, horn stockpiles and rhino movements nationally especially on private sector;
- Assist in trying to build support for coordinated conservation initiatives and to sensitise the private sector to training opportunities (e.g. in monitoring, law enforcement etc) and need for increased vigilance and communication in the face of the current escalating poaching threat.

LONGER TERM STRATEGIES

Strategy Outcome 2

Securing the shared commitment of government (at national and provincial level), private land owners' local communities and international stakeholders, as well as the necessary financial and manpower resources and political will to implement this policy;

Strategies / activities

- Obtain high-level political commitment and mandate, inter-departmental and legislative support through regular briefings to the Minister of Environmental Affairs, relevant Parliamentary Portfolio Committees and other role-players identified by the Minister;
- Identify relevant role-players/stakeholders in all spheres both national and international who could be impacted by or contribute to any activities implied by this policy;
- Ensure stakeholder participation and commitment in the implementation of this strategy by conducting workshops/work sessions between government (national and international) and private stakeholders, on the establishment of long-term structures, cooperation, information sharing, the

drafting of protocols, processes and procedures, and the sharing of best practices on security, crime prevention, combating poaching, illegal or unethical practices and related environmental crime issues, inclusive of giving consideration to the establishment of Public Private Partnerships (PPPS);

- Establish a communication structure to liaise between the Department, the Unit, other government departments (national and international) and private stakeholders in order to promote close working relationships and information sharing, by conducting regular meetings, public awareness or conservation education campaigns and community outreach programmes;
- Encourage information sharing and public participation through mechanisms such as an information reporting hot line, incentive schemes and community-based security and policing initiatives;
- Allocate an adequate budget for the implementation of this policy and derived strategies or actions;
- Lobby and secure additional financial resources, through private sector donors and/or grants to augment the government budget and/or to embark on PPP projects;
- Lobby support and acceptance for the implementation of the strategy to ensure optimal rhino security in South Africa and the Sub-region through existing inter-governmental agreements and mechanisms (e.g. Southern African Development Community (SADC));

Strategy Outcome 3

Supporting the establishment of a national coordination structure for information management, law-enforcement response, investigation and prosecution;

Strategies / activities

- Establishment of a permanent Biodiversity Special Investigation Unit (BSIU) (also referred to as "the Unit") in the Department of Environmental Affairs to adequately respond to the current upsurge in wildlife crime and smuggling activities in South Africa;
- Develop an implementation plan aimed at building the Unit's capacity and resources, inclusive of the definition of the required skill set, training standards, specialised equipment requirements;
- Establish Memorandums of Understanding (MOU's) between the Unit, the Department, all relevant government departments and private stakeholders, inclusive of the development of Public Private Partnerships (PPP's);
- Drafting and development of protocols, deployment actions, Standard Operating Procedures (SOP's) and monitoring tools for all activities to be conducted by the Unit, inclusive of joint operations at national, regional and international level, law-enforcement actions, information management and provision of related assistance to provincial structures and private owners;
- Promote cooperation and sharing of best practices on security, crime prevention, combating poaching, illegal or unethical practice, wildlife inspection, law enforcement, forensics skills and related environmental crime issues;
- Recommendation of minimum standards and specifications for enhancing compliance with treaties and laws, security measures and policing initiatives which are applicable to government and private stakeholders and aimed at enhancing protection plans and conservation management of rhino populations;
- Establishment, recruitment and maintenance of informer networks and informer management training;
- Supporting the establishment of specialised environmental courts and the sensitising of the prosecutors in environmental crime related prosecutions;
- Promote the acquisition of adequate human capital at the government and private sector level to support the implementation of this policy and derived strategies or actions.

Strategy Outcome 4

Developing an integrated and coordinated national information management system for all information related to rhino species in order to adequately inform security related decisions;

Strategies / activities

- Establish and maintain a database for all crime related information in respect of any activities impacting on rhino populations, rhino horns and associated by-products in South Africa;
- Establish secure electronic reporting and information sharing mechanisms for populating the above database, inclusive of the information emanating from informer networks;
- Integrate the above database with applied scientific research data, including rhino population census statistics and estimates for public and private land, surveys, monitoring reports or other data related to rhino population, horns or associated derivatives; Efforts should also be coordinated to dovetail with existing efforts for black rhino and white rhino on state land (under SADC, RMG and IUCN, SSC, AfRSG). There is a definite need to also routinely monitor white rhinos and horn stocks on private and community land;
- Integrate the above database with the national permit system data for all CITES, National and Provincially issued permits relevant to rhino species and any associated by-products;
- Conduct extensive inter-departmental analysis of all available information, culminating in regular risk and threat assessments, trend identification, the identification of modus operandi and criminals;
- Conduct or commission research (as well as cooperating and contributing to international research initiatives) applicable to the protection, conservation or utilisation of rhino species or associated by-products; such as explaining the escalation in poaching, the demand for rhino products, gaining an understanding of the end-user market dynamics, examining alternative approaches which might reduce illegal horn prices and hence reduce illegal demand and ultimately poaching.

Strategy Outcome 5

Investigating proactive security related measures aimed at possibly facilitating a better understanding for any possible future regulated and controlled international trade in the species, and any associated by-products;

Strategies / activities

- Conduct a comparative technical study on current international projects, research being conducted or other initiatives, inclusive of documenting case studies involving successful security related measures, in both the legal and illegal wildlife trade on which to base possible future interventions or recommendations;
- Engage in and support all international initiatives aimed at obtaining a clearer understanding of the consumer demand dynamics involving the use of rhino horn and rhino horn derivatives;
- Engage with and support Regional initiatives through the INTERPOL / Rhino and Elephant Security Group to obtain a clearer understanding of the trends, modus operandi, suspects and initiatives taking place in other Regional rhino range states;
- Support the optimal demographic and genetic management of rhino populations and allocation of rhino to achieve national demographic (>5% annual population increase) goals as called for in the national black rhino conservation plan and national white rhino strategy. Seeking to breed up numbers rapidly forms another key component of all national rhino plans and strategies. This aspect (biological management to meet demographic and genetic goals) is currently covered nationally for black rhino by the SADC, RMG;
- Assess and re-evaluate the success of, and determine possible loopholes in, the local mechanisms currently in place for stockpile management, control and movement;
- Support the finalization of the development and execution of Biodiversity Management Plans for species (currently nearing completion for black rhino by the RMG but which should be modified in

the light of any new initiatives to emerge from this strategy) which incorporate a holistic approach to managing, utilising and securing the rhino populations, inclusive of comprehensive crime prevention strategies based on industry best practice and lessons learnt as well as supporting all efforts to reduce human-rhino conflicts;

- Monitoring: To cooperate with existing initiatives to maintain accurate population estimates and demographic measures of performance for populations (e.g. through SADC RMG and IUCN SSC AfRSG), and where necessary, and information is currently inadequate (white rhinos on private and community land), seek to obtain and collate such data on a regular basis. Where possible these data should be synthesized at a National meta-population level to aid in future rhino security management;
- Consider the impact of agreements, legislation and policies not related to NEMA but which may impact on rhino security; including protected area and reserve management conservation issues and security;
- Support Research & Development of new investigation techniques to improve the effectiveness of the safety and security efforts resulting in improved investigation methods and in better understanding of the crime dynamics, e.g. liaison with United States Fish and Wildlife laboratory, the geographic origin of rhino horn project and the field identification of rhino horn/products.

APPENDIX 6: SYSTEM FOR ASSESSING AND ALLOCATING PERMITS FOR HUNTING BLACK RHINO IN SOUTH AFRICA.

Introduction

A strong case has been made on demographic and genetic wildlife management grounds for the removal of the odd specific individual and usually older male black rhino from some breeding populations (Emslie 2004). It may seem counter-intuitive, but the removal of a small number of individually identified males may actually enhance overall metapopulation growth rates and further genetic conservation (Knight 2001). As a spin-off, the hunting of such animals could generate substantial revenue and help provide much needed additional funding to support effective conservation management programmes, as well as providing incentives for rhino conservation. It was for these reasons that South Africa and Namibia both applied for and got approval at the 13th CITES Conference of the Parties for an annual hunting quota of 5 black rhino males each.

IUCN SSC's African Rhino Specialist Group (IUCN SSC AfRSG), the SADC Rhino Management Group (SADC RMG), Ezemvelo-KZN-Wildlife (EKZNW) and South African National Parks (SANParks) however expressed reservations concerning certain aspects of the method and criteria used initially to allocate the limited number of black rhino hunting permits in South Africa. These organizations felt that the criteria and permit approval mechanism needed to be revised to:

- ensure that the **primary focus** of any black rhino male hunting remains the **enhancement of biological management of breeding populations**; and therefore application approvals should be based primarily on the **conservation** and **wildlife management** grounds being advanced as to why a specific male needs to be (or was in the past) removed from a **breeding** population;
- provide incentives rewarding good biological management, monitoring and long term-commitments to rhino conservation as well as encouraging neighbouring smaller properties to take down fences and create great bigger reserves with greater potential to contribute significantly to rhino conservation efforts;
- encourage the hunting of animals *in situ* (i.e. without translocating them) whenever possible, both on animal welfare grounds and to maximize revenue for breeding populations;
- avoid creating perverse incentives which could allow an unscrupulous manager of a small population to manufacture a situation deliberately (for example overstocking a small population with males to create a skewed population and/or establishing a population at high densities relative to carrying capacity) which would encourage fighting; and which could then give rise to "problem" or "vagrant" animals (which could then be motivated to as candidates for hunting under existing rules);
- make the primary permit application approval process at the provincial level more rule-based and objective, and hence easier to apply consistently between provinces;
- add a level of external vetting to complement internal controls;
- ensure that the respective province's representative on the SADC RMG is consulted with regard to any applications from his/her province, thus helping ensure insight into broader black rhino demographic and genetic conservation management issues; and
- bring the criteria more in line with an AfRSG working group's recommendations and suggested guiding principles (Leader Williams *et al* 2005).

As a result of these concerns and in the light of experiences to date, the black rhino hunting permit approval and allocation process was reviewed and discussed at the November 2006 SADC Rhino Management Group meeting. South Africa's Department of Environmental Affairs and Tourism (now DEA), the Provincial Conservation Agencies, SANParks, the private sector and Namibia's Ministry of Environment and Tourism were all represented at this SADC RMG meeting. DEA's representative was fully supportive of the need to revise the criteria in line with discussions, and it was agreed that a small working group with representation from IUCN SSC AfRSG, SADC RMG, EKZNW and SANParks should further develop the proposed system and draft a document containing revised recommendations for submission to DEA.

While commenting favourably on the draft document it received from the RMG working group, DEA requested that prior to forwarding for subsequent high-level approval, the draft system should be sent back to SANParks and provincial conservation agencies for comment. This was done and the document was revised in the light of comments received from the provinces. The proposed system was favourably received by SANParks, KwaZulu-Natal, North-West, Northern Cape, Free State, Western Cape and Mpumalanga representatives. Eastern Cape responded they had no comment to make at present, and as of the 1st November 2007 no comments on the document had been received from Gauteng and Limpopo.

The head of the RMG working group then contacted individual provincial representatives to discuss/clarify issues raised and to get their agreement when this was appropriate. The proposed revised system was then presented to a meeting of provincial officials at DEA offices in Pretoria which led to some outstanding issues being finalized. At the suggestion of DEA this system plan has been incorporated into the revised South African Black Rhino Conservation Plan with this document forming Appendix 6 to the Black Rhino BMP for 2011-2020.

At CITES Conference of the Parties (CoP)14, Kenya noted there had been some concerns regarding some initial black rhino hunting permit allocations in South Africa, and because of this, and a number of other reasons, they proposed at CITES CoP14 that the CoP13 resolution providing for limited black rhino hunting quotas should be repealed (Emslie 2007). Although the Kenyan proposal was rejected at CITES CoP14; their attempt to revoke the existing quotas highlighted the need for the South African black rhino hunting permit approval system and its implementation to be above reproach; and clearly defensible on conservation management grounds should it be challenged again in future by the international community.

To some extent the recent publication of Implementation Guidelines : Threatened or Protected Species (TOPS) regulations in terms of the National Environmental Management; Biodiversity Act - Act10 of 2004 (NEMBA) goes some of the way to addressing some of the concerns raised above; making "put and take" rhino hunting illegal in South Africa. These came into force on the 1st February 2008.

Guiding principles

The guiding principles adopted by the IUCN SSC AfRSG working group (Leader-Williams *et al.* 2005) were also accepted by the SADC Rhino Management Group (SADC RMG). These were that any hunting and permit allocation system should:

- ensure that any off-takes are biologically sustainable;
- be based on good monitoring;
- ensure that incentives from any hunting opportunities are maximized;
- not discriminate between state agencies and the private sector;
- reward and encourage good biological management to meet demographic and genetic goals;
- reward long-term commitments to black rhino conservation; and,
- ensure that appropriate internal and external controls are in place.

The SADC RMG working group felt that two additional guiding principles should be added to the initial AfRSG Working Group list, namely that any system should:

- seek to ensure that the welfare of individual animals being hunted was duly considered; and
- ensure that any black rhino hunting is ethical and involves the fair chase of wild animals.

These guiding principles provide a sound basis on which to revise and modify the existing hunting permit approval and tag allocation system.

Since the recommendations of Leader-Williams *et al* (2005), a limited hunting has been approved in South Africa and Namibia, with South Africa hunting a limited number of black rhinos since. Namibia has also recently hunted a small number of surplus male rhinos.

Proposed Process

A specific Form 1 (available from the Provincial Rep on the SADC RMG, the SADC RMG or DEA) should be filled in by the applicant and submitted to the Provincial Agency (as well as cc'ing to DEA so they are aware an application has been made).

A November 2006 SADC RMG meeting agreed that the Provinces should continue to be the primary bodies tasked with reviewing and initially vetting permit applications to see if they qualify to be forwarded to DEA with a recommendation to approve the application. In most cases, provincial officials will be best placed to examine applications, as they should have a more detailed knowledge of specific properties and black rhino populations in their areas.

The 2006 RMG meeting supported the recommendation that more specific guidelines and rules needed to be provided to assist Provinces more objectively and consistently to decide whether or not to approve initial hunting permit applications.

To facilitate and standardize this process the SADC RMG supported the use of specific application and assessment forms to (1) help ensure the applicants supply all the information required to assess their application properly, (2) assist the Provinces in their assessments of the applications, and (3) improve consistency in assessing hunting applications across provinces. Provinces must use the specific Form 2 and where appropriate the specified RMG sex ratio tables to assess applications (all available from Provincial RMG rep or RMG or DEA). Provinces should also score any applications that meet the criteria from 1-12 using the scoring system developed by the RMG. In some cases provinces may wish to identify a small committee to review applications or use their hunting or commercial desk to do so; but their Form 2 still needs to be checked and signed off by that Province's representative on the RMG.

DEA remains the body that will continue to allocate the limited numbers of permits. To provide an additional check, the 2006 SADC RMG meeting and DEA agreed that prior to the final approval process, potential applications should be forwarded to the RMG, who (as coordinators of annual black rhino status reporting since 1989), could provide an additional external expert check for DEA (with the RMG checking the provincial assessment (Form2) and application (Form1) to ensure all the necessary information has been included, check the Provincial assessment against the criteria and rules, check any supplied translocation information against RMG records, and confirm that the population has participated in annual RMG black rhino status reporting and that the breeding population the animal originally came from has been a willing participant in conservation efforts to grow national black rhino numbers.

Once the RMG has reviewed and checked the application it submits its comments and its recommendations to DEA who then make the final decision on whether or not each application passes the initial vetting process and which applications are rejected for not meeting the required conservation criteria. In other cases it may be that insufficient information has been provided to properly evaluate the application against the criteria; and such applications may be returned to the province by DEA to obtain additional outstanding information or to request a re-assessment of the application.

While the CITES⁴ hunting tag system is designed to limit and control the number of exported black rhino hunting trophies it is also possible that a local South African may also wish to hunt a black rhino. It is therefore recommended that, at least initially, only up to five black rhino hunting permits should be issued for the whole country annually; and this number should include any which are hunted in South Africa by local resident hunters. For this reason it is recommended that it is mandatory that local hunters within South Africa should also have to apply for one of the 5 national tags annually.

Allocation of the five hunting tags annually

Black rhino are classified on the IUCN Red List of Threatened Species (and also the SA Red Data Book) as *Threatened - Critically Endangered*. Thus due consideration needs to be given as to how hunting can be structured to enhance and incentivise black rhino conservation. For this reason it was **not** recommended that the first five approved and vetted applications in any given year simply should be given the tags; or that five applications simply be selected at random from the pool of approved and vetted applications in any given year. While these approaches would certainly satisfy the minimum selection criteria used in the vetting process; they would not best further and support the guiding principles above.

To share benefits among different reserves no more than one tag should be allocated to any particular reserve/property in a year, unless there are fewer than five areas applying for tags that year. It is proposed that a reserve/property can submit up to three applications per year for consideration. If three applications are submitted the reserve must clearly indicate which of the three is the primary application, and which the secondary and tertiary applications are. No more than one approved and vetted primary application per reserve will usually be considered in any year. However, in the special case where there are insufficient approved and vetted primary applications in a year to allocate all five tags to five different reserves, vetted secondary applications can then be considered; with the highest scoring (see Appendix 1) vetted secondary applications being preferentially allocated the remaining tags. Only if there are fewer than five vetted primary and secondary applications would a tertiary application be considered in any given year.

The following points serve as a summary...

- In any year a reserve can submit up to three applications (one primary, one secondary and one tertiary).
- If vetted and approved primary applications are received from at least five different reserves in a year, then only the vetted primary applications will be considered for hunting tags that year.
- If fewer than five vetted primary applications are received (i.e. applications are received from fewer than five reserves/properties), then each would be allocated a tag; with remaining tags being allocated to the vetted and approved secondary application(s) with the most points. Points are allocated according to whether or not the animal is to be hunted in-situ, the size of the breeding population
- When there are more than five populations with approved primary applications in a year, the following hybrid approach is to be used to select which five vetted applications receive tags that year...

Firstly approved and vetted applications (only one vetted primary application to be considered per park (unless there are fewer than five parks applying when secondary and possibly also tertiary applications can be considered) should be scored using the points

⁴ CITES is an International Convention on Trade in Endangered Species that governs and controls trade in endangered species. In the case of black rhinos approval has been given by CITES Parties for an annual export quota of five trophies per annum under CITES permits, but with specific conditions attached regarding the specific animals being hunted.
SA Black Rhino Biodiversity Management Plan 2011-2020

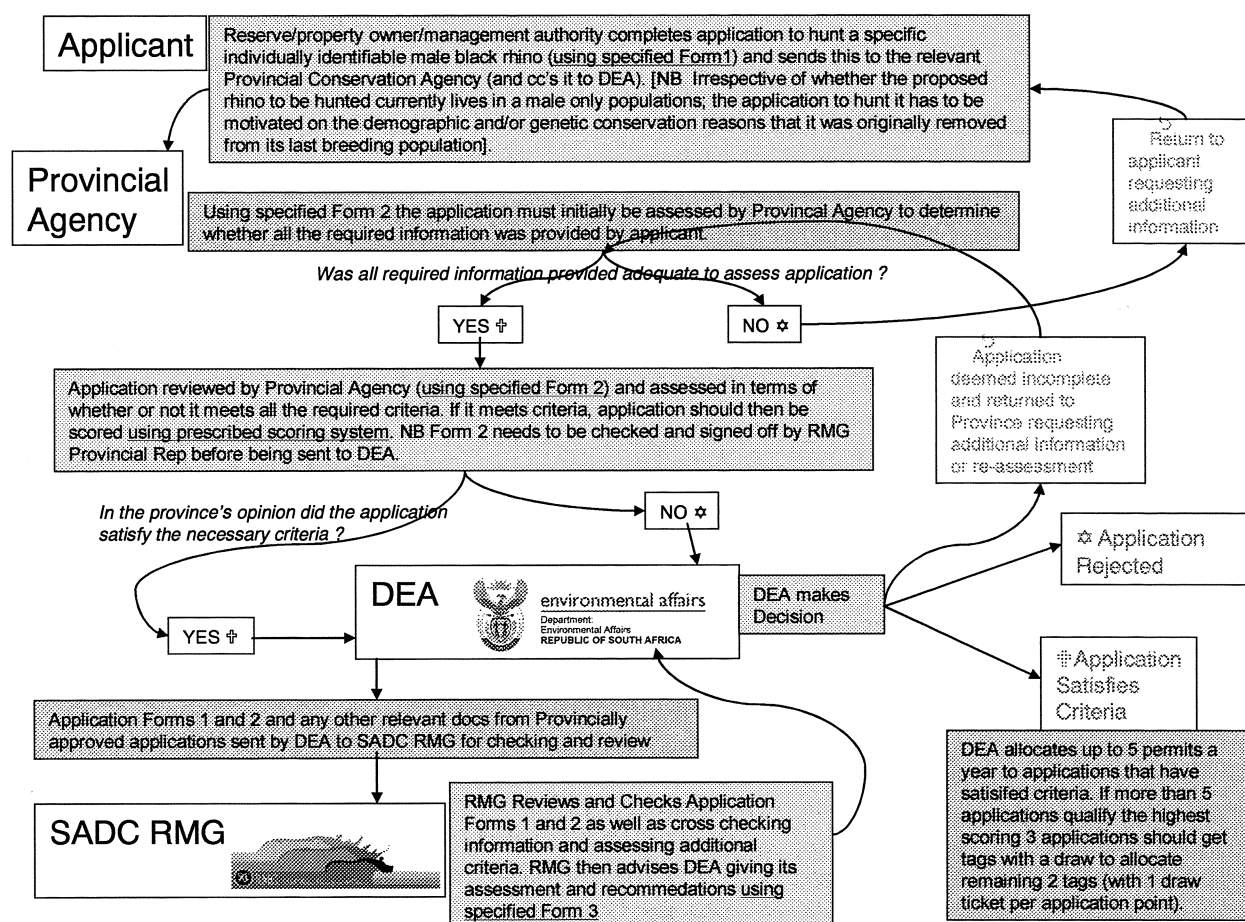


Figure 1: Flow chart illustrating system for applying for, vetting and allocating black rhino hunting permits.

The following points serve as a summary...

- In any year a reserve can submit up to three applications (one primary, one secondary and one tertiary).
- If vetted and approved primary applications are received from at least five different reserves in a year, then only the vetted primary applications will be considered for hunting tags that year.
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- When there are more than five populations with approved primary applications in a year, the following hybrid approach is to be used to select which five vetted applications receive tags that year...
 - Firstly approved and vetted applications (only one vetted primary application to be considered per park (unless there are fewer than five parks applying when secondary and possibly also tertiary applications can be considered) should be scored using the points system⁵ developed by the SADC RMG. The total scores per qualifying application will range from a minimum of 1 to a maximum of 12 points.

⁵ The RMG points system is rule based and takes into account a) breeding population size and whether the rhino to be hunted was translocated or not (up to 4 points) b) the conservation reasons and urgency for the removal of the specified rhino from breeding population (up to 5 points) and c) the contribution to metapopulation growth and management of the breeding population the animal was removed from (up to 3 points).
SA Black Rhino Biodiversity Management Plan 2011-2020

- Secondly, to incentivise and encourage good conservation, the three applications with the highest number of points should automatically be allocated the first three hunting tags each year.
- Finally, to maintain sufficient incentives for a) smaller populations still contributing to metapopulation management, and which may also need to remove specific males for conservation reasons and b) small male only populations that are providing homes for surplus males that need to be removed from breeding populations; it is proposed that the final two tags are selected from all remaining approved and vetted applications using a weighted lottery system⁶ along the lines recommended by Leader-Williams *et al.* (2005). It is proposed that the number of points allocated per application is used to determine the number of tickets each application gets in the draw⁷. Vetted applications which fail to get tags in a given year can be re-submitted for consideration for a Tag by DEA in future without the application having to be re-assessed (provided the motivation for hunting the animal remains the same).

Application must be based on conservation management grounds

In recognizing that the primary motivation for hunting is to further black rhino demographic and genetic conservation goals, the SADC RMG meeting agreed that CITES hunting tags should **only** be allocated to animals which at some stage have been identified as needing to be removed from breeding populations for conservation reasons (satisfying stipulated criteria), and which either are being hunted *in situ* in that breeding population; or later in a male-only populations to which they have been translocated (with the proviso that TOPS regulations under NEMBA must be satisfied). **In other words the assessment of any hunting tag application has to be undertaken based on the original conservation management motivation to remove an animal from its last or current breeding population**, rather than simply assessing an application for hunting of say a lone male in a male-only population without reference to the previous history of the rhino.

If a male has been translocated to another breeding population, it can only be hunted if a motivation can be made on conservation grounds for the need to remove it from its new breeding population (using the RMG criteria to decide if its removal is justified on genetic and/or demographic grounds). Thus before a translocated animal in a breeding population can be considered for hunting, it must have lived in its new breeding population for at **least three years** (to show commitment to breeding up rhinos in the metapopulation), and the application to hunt it will have to be motivated on conservation management grounds in its new population. In general, such applications should be uncommon soon after the setting up a new breeding population. As a result, any application to hunt a rhino only a few years after it has been translocated to another breeding population should be scrutinized very closely by provincial conservation officials to make absolutely certain that the proposal to hunt that animal is justified on conservation management grounds and that a situation has not been deliberately manufactured to "create" potential

The points system aims to incentivise the creation and maintenance of larger IUCN SSC AfRSG-rated continentally "Important" and "Key" breeding populations; to encourage the hunting of adult animals *in situ* in their breeding populations where possible (whilst recognizing that this will not be possible for males that need to be removed as sub adults); to help prioritise applications with stronger conservation motivations and applications that are more urgent; and finally to reward either demonstrated good biological performance in the breeding population the animal to be hunted is in or came from, or to reward management efforts in the breeding population aimed at improving metapopulation performance in future.

⁶ It is **not** proposed that a strict pro-rata lottery system based on reserve area (for example the 1 ticket/200ha tried with leopard) be adopted. This is to strike a balance and to maintain sufficient incentives for smaller populations which are still contributing to metapopulation management and which may also need to remove animals for conservation reasons. Using the proposed system the number of tickets, which could be allocated to qualifying applications, will range from a minimum of 1 to a maximum of 12; and a population with 250 rhino would only get only two more tickets than one with 25 rhino even though it has ten times the number of rhinos.

⁷ For example an application that gets 8 points would get 8 tickets in the draw.
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hunting candidates (e.g. by deliberately skewing the sex ratio in the breeding population, or overstocking of the founder population relative to estimated ECC). To this end any males introduced into a breeding population over and above a 50:50 sex ratio should be discounted and cannot be included in calculations to determine if the sex ratio is sufficiently unfavourable to justify hunting on conservation grounds.

Criteria for a black rhino to be classified as a suitable animal for hunting on conservation management grounds

To qualify to be an approved animal for hunting it is proposed that every one of the following criteria (□) have to be met.

- It has been deemed necessary on wildlife management grounds to remove the animal from its breeding population (either now or at an earlier stage in the past if already translocated to a male-only population).
- The justification(s) for removing a male from a breeding population on wildlife management grounds must satisfy **one or more** of the following criteria ():
 - it is an old adult male (>30 years old);
 - intensive monitoring or genetic analyses shows that the specific animal has in all probability dominated the breeding for a significant period and potentially is at risk of mating with daughters⁸.
 - monitoring is sufficiently detailed and intensive to show it is a territorial adult male in a population (or area within a larger population) and there have been no recorded calves born in its area for over 4 years; with the proviso that this poor breeding cannot be put down to a population being deliberately overstocked relative to estimated carrying capacity (as determined by recognised black rhino carrying capacity estimation experts or based on SADC RMG carrying capacity estimation models);
 - it is an exceptionally aggressive animal that has killed at least two other black rhino (and where one cannot simply export the "problem" bull to another population); with the proviso that this excessive fighting cannot be put down to a population having been deliberately overstocked relative to estimated adult male carrying capacity (as determined by recognised experts or RMG carrying capacity models) in a deliberate attempt to create "problem" animals.
 - it is either an adult male (but not necessarily over 30 years old) in a breeding population or was an adult male at the time of its removal from its breeding population and subsequent transfer to a male only population; and at the time of its removal (or hunting in situ in its breeding population), the breeding population was stocked at greater than 50% of ECC (as determined by recognised experts or RMG carrying capacity models) and had an unfavourable adult sex ratio with an excess of adult males as defined by specific RMG

⁸ Motivation cannot be made to hunt on the grounds that a bull might mate with its mother as males will have the potential to mate with their mothers in most wild rhino populations and rhino managers to date have not sought to interfere to the extent of removing all male offspring from populations just in case this happens. Rather the concern here is to remove animals in specific cases where a particular male may have dominated the breeding for some years, and is also at imminent risk of mating with a number of daughters. The inclusion of this genetic criterion is not intended to mean that it is justifiable to hunt any bull as soon as there is a chance of mating with a daughter (however small that chance is). In most wild populations males will have a chance to mate with some daughters. In other words, a certain amount of inbreeding may be natural. We are not seeking to routinely remove all males from populations as soon as there is a possibility of mating with daughters. This genetic criterion was intended to deal with an Ngorongoro type situation (where two males have dominated the breeding for many years). This criterion is intended to prevent or limit cases where males have dominated breeding for many years and in order to prevent significant levels of inbreeding in future. Expert genetic advice can be sought by the SADC RMG to help refine this criterion, as different rules of thumb may be needed for different sized populations as inbreeding is likely to be more of a problem in smaller populations. In addition, it is also probably necessary to define at what ages one may consider breeding as a reasonable possibility. While there are records of a few females breeding as young as 4.5 years this is exceptionally young rather than the norm (age at first calving is normally at 7 years +). While males are sexually mature earlier, unless there are no other adult males in the population they are only likely to be socially mature and breed later (usually at 10+ years). Thus it is recommended that the deemed minimum "breeding" ages for the purposes of hunting applications be 7 years for females and 10 for males.

tables⁹. These tables make allowances for the fact that SADC RMG status reporting has indicated that smaller populations with smaller carrying capacities can carry relatively fewer dominant adult males.

- at the time of its removal from its breeding population and transfer to a male only population it was a young (usually sub-adult E class) male and at the time of its removal, its breeding population was stocked at greater than 50% of ECC (as determined by recognised experts or RMG carrying capacity models) and the breeding population at the time of removal had an unfavourable sex ratio with an excess of adult and sub-adult males as defined by the appropriate RMG rule table⁹. As sub adult males are unsuited to hunting *in situ* at the time of removal from their breeding population, no points penalties are applied for not hunting these animals in their original breeding population.
- at the time of its removal from a breeding population the animal 1) formed part of an annual set % harvesting removal to keep the breeding population productive where removals of both males and females were undertaken in order not to negatively skew the sex ratio in the breeding population (i.e. so it didn't end up with a higher male % following removals); and 2) where the specified male removed as part of such a biological management removal ended up being surplus to requirements in terms putting together founder breeding groups of animals that were subsequently translocated to new populations (which are usually slightly skewed towards female founders). If well motivated, consideration could be given to allowing the hunting of such a surplus animal if transferred to a male-only population.
- The animal is male (primarily of the subspecies *D.b.minor*). Other subspecies of black rhino can be considered on well-motivated conservation grounds (if vetted and approved by the RMG and DEAT).
- The animal is not sick or severely injured with no chance of full recovery.
- The breeding population must consist of at least 10 animals (with a minimum of at least 7 adult F class animals) and an estimated natural carrying capacity of at least 13 animals (as determined by recognised experts or RMG carrying capacity models).
- If being hunted in a male only area; in order to facilitate fair chase ethical hunting the animal would have to have been present in the area for at least three months and the area must be a minimum of 500ha and be big enough that its carrying capacity can support the number of males present without supplementary feeding.
- At the time of being removed from a breeding population, the animal has to have been present in that population for at least three years (to encourage a commitment to breeding).
- The breeding population must formally subscribe to being part of the effort to breed up animals rapidly in order to help meet national metapopulation growth targets.
- The breeding population (and any recipient male-only population) has to have been a willing participant in annual RMG status reporting (a failure to contribute to RMG status reporting after being requested to do so will disqualify an application).
- The specific animal can be individually identified and full details of how the animal can be recognised are reflected in the permit application and the specific animal can be recognised via microchips and/or DNA samples if it has been translocated to a male-only population. In some cases where one of a number of different rhinos could qualify under the same criteria (such as improving a male biased sex ratio) consideration can be given to hunting one of a specified number

⁹ A rule table has been developed by the RMG to assess whether or not hunting is justified on the grounds of improving a markedly skewed sex ratio (in favour of males) in *completely or almost completely known populations*. A different rule table is to be used to determine if hunting is justified on the grounds of improving sex ratio in *incompletely known sampled populations* (i.e. where some of the population are "clean" [not readily individually identifiable in the field] and population size is estimated using a recognized technique such as *RHINO 2.1* mark-recapture, block counting *etc.*). To qualify under this criterion the population (1) cannot be under 50% of EEC, (2) the total breeding population must have at least 10 rhinos and (3) there should be no fewer than 7 adult F class rhino. Given the sampling variability inherent in estimating the age and sex structure from sightings frequency data, the tables require the use of the an averaged estimate of the adult sex ratio data over the last three years together with the most recent estimates of the population size of adults (F) or adults and sub-adults (F+E).

of individually identified rhinos). In the latter case, details of how all the potential rhinos are recognised must be supplied, motivating why a single specific animal has not been nominated.

Under this revised system it will no longer possible to motivate to hunt a black rhino in South Africa on the grounds that it is a vagrant and breaking fences, is dangerous, attacking vehicles etc.

The standardized AfRSG ageing system is to be used to classify (F) adults which are >7 years old. E class sub-adults are from 3.5 to 7 years old. A training module (Adcock & Emslie 2004) is available for ageing black rhino using the standardized A-F system on request from either IUCN SSC's African Rhino Specialist Group or the SADC RMG. In time it is hoped to make this available for download from the AfRSG's web page.

TOPS and facilitating fair chase hunting in male-only populations.

TOPS regulations have to be met.

On practical and ethical grounds first prize must also be to hunt an identified animal *in situ* where it lives, such as has happened in Pilanesberg National Park. However should a conservation agency for some reason be precluded from hunting in their Parks/Reserves, an identified and approved male from such a population could be translocated to another male-only population and subsequently hunted there.

To allow a potential animal being hunted in a male only population to adapt to its new environment (to facilitate fair chase) and prevent "put and take" hunting, the animal to be hunted should have been present in its new male only reserve for at least three months (the average time it appears to take translocated black rhino to settle down in their new homes based on intensive monitoring in a number of the Black Rhino Range Expansion Project sites).

Following discussions at a meeting at DEA offices in 2007, it was also decided that the male-only area where a rhino is to be hunted must be large enough to support the number of males (in terms of EEC as estimated by recognised experts or RMG ECC estimation model). For example, if the ECC of the area is estimated at 0.1 rhino/km² then this translates to 10km² or 1,000 ha minimum requirement per rhino. It was also decided that on fair chase grounds, irrespective of how good the habitat is, the area cannot be less than 500 ha¹⁰.

In approving a hunting permit the following conditions must ALL be met in the area where the animal is to be hunted, namely:

- the enclosed area it is to be hunted on must be at least 500 ha with sufficient suitable natural browse and water to sustain the animal indefinitely (as assessed by the relevant Provincial conservation agency) without the need for routine supplementary feeding and not less than the area required for the number of males given ECC for the area (see above);
- it must have an appropriate game fence;
- sporting rifles of sufficient calibre must be used as per TOPS regulations (for example bow-hunting is not allowed);
- the animal has to have been living in the area fending for itself for at least three years if in a breeding population (to encourage commitment to breeding); and at least three months in a male-only population (but must also satisfy all current TOPS regulations under NEMBA);
- the landowner and hunter must be in possession of the necessary hunting tag from DEA as well as possess a hunting permit from the local Provincial conservation agency; and

¹⁰ Thus if the EEC was 0.3 rhino/km², the minimum area size for a male only population would be 500ha for only one male rhino, 666ha for two and 1,000ha for three male rhino.

- a representative from the local provincial conservation authority must accompany the hunt and check the sex, age and identity of the animal being hunted (via ear-notches and transponders, *etc.*) and bona fides and shooting skills of the hunter.

Scoring of vetted Applications

As indicated on the flow diagram (Figure 1) should more than 5 vetted applications be received within a year, then in order to incentivise

Revision of application approval and rating system

In due course, as the system continues to be used it may become clear that its operation and rules could be improved in places. Also should an application to a future CITES CoP for an increase in quota size be approved by the Parties to CITES then the system would also need to be revised.

Unless required under new legislation, it is proposed that before coming into effect, any changes to the system should have to be approved by DEA and it is recommended that any changes to the system should also be supported by a 2/3rd majority of the RMG representatives of the nine provinces.

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