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CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA



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RHINO-RELATED CRIMES IN AFRICA: AN OVERVIEW OF POACHING, SEIZURE
AND STOCKPILE DATA FOR THE PERIOD 2000-2005

1. The attached document has been submitted by the CITES Secretariat at the request of TRAFFIC and in relation to agenda item 54 (Rhinoceroses).
2. The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries.

Rhino-related crimes in Africa: an overview of poaching, seizure and stockpile data for the period 2000-2005

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1. Executive Summary

This information document has been prepared by TRAFFIC as an addendum to CoP14 Doc. 54 *Rhinoceroses* Annex 1. It specifically provides additional information on rhino-related crimes and trade dynamics in Africa, as part of TRAFFIC's obligation to provide an assessment of poaching, illegal trade and stockpiles pursuant to Decisions 13.23, 13.24 and 13.25 and outcomes of the 53rd and 54th meetings of the Standing Committee.

Analysis of data focused on the calculation of various standardized indicators from the eight largest African range States during the period 2000-2006. The findings presented in this document should be interpreted in the context of the information and recommendations already provided within CoP14 Doc. 54, prepared by the Secretariat.

With regards to the impact of rhino-related crimes on rhino conservation status, the majority of range States in Africa have minimized poaching to levels at which their overall rhino population numbers continue to grow healthily. Further, continental totals of both African rhino species continue to increase. Regarding the flow of horns from Africa to illegal markets, range States collectively managed to recover 42% of horns lost to illegal trade through successful enforcement interventions during 2000-2005. Swaziland and Namibia were two range States that demonstrated notably effective enforcement strategies to reduce poaching and movement of horn.

The results from this assessment add further support to all of the draft decisions recommended by the Secretariat in CoP14 Doc. 54. Some additional recommendations are also provided.

In support of the draft decisions given in CoP14 Doc. 54, paragraph 18, this analysis provides clear justification for *greater emphasis on the Democratic Republic of Congo (DRC) and Zimbabwe*, both in terms of support from other CITES Parties and assessing the implementation of Resolution Conf. 9.14 (Rev. CoP13):

Both the DRC and Zimbabwe are characterized by having not only the highest severity of poaching of all African rhino range States (i.e. poaching pressure and impact) but also low ratings for management response effectiveness. In DRC, more than 60 per cent of the rhino population in DRC was illegally killed during the three-year period, 2003-2005, although strengthened park management has since reduced wildlife poaching pressure in general. In Zimbabwe, a very high number of rhino crimes took place, and poaching accounted for two-thirds of all rhino mortalities. Translocation of populations under threat has helped to reduce the impact of poaching, but poaching intensity (as measured using the proportion of total mortalities that were killed illegally) has increased. Illegal killing during 2003-2005 affected 12% of the 2003 rhino population, and recent data shows a downturn in some key populations. Only 13% and 8% of lost horns were recovered in DRC and Zimbabwe respectively during 2000-2005. Further, enforcement follow-up has had limited effectiveness with relatively low levels of arrests and prosecutions.

The apparent increasing trend in horn volumes leaving Africa and the existence of sophisticated criminal operations involving several countries support the Secretariat's recommended draft decisions to more closely examine cross-border collaboration, the accumulation of horn stocks and illegal trade flows (CoP14 Doc. 54, paragraph 17):

An important finding of this information document was the *apparent increase in the overall volume of horn entering illegal trade from Africa since 2000*. This matches a switch to commercial rhino poaching targeting horn in Kenya, Zimbabwe and DRC during the period 2001-2003. Also key to this development has been the *rising prominence of horn sources other than poaching*, including horns acquired through legal means on private properties within South Africa (e.g. trophy hunting or acquisition of registered horns) but subsequently laundered into illegal trade. While South Africa has been a source of relatively large quantities of horn for illegal markets, it should be noted that has had a minimal impact on overall rhino population performance.

Another pattern in rhino-related crimes during 2000-2006 was the general *rise in the proportion of horn entering illegal trade* (not recovered through enforcement). This appears to be most closely linked to the *increased organization of criminal horn trading networks operating in Africa* (and, possibly, capacity shortages within some conservation authorities). For example, the proportion of recovered horn decreased from 72% during 2000-2002 to 23% during 2003-2005 in Kenya, and from 64% to 49% in South Africa. Concern has been expressed over the increased levels of sophistication by which some Southeast Asian horn trading networks operate, which may pose a more serious threat to rhino populations if left unaddressed.

With regard to ongoing reporting pursuant to Resolution Conf. 9.14 (Rev. CoP13), the type of indicators presented in this document should prove useful in understanding future dynamics. As detailed in CoP14 Doc. 54, poaching and the illegal trade in rhino horn is also an issue for Asian rhinos. To fully understand the trends in Asian rhino range States, and possible linkages with horn flows from Africa, it is important that a similar analysis is carried out for Asian rhinos.

The analysis presented in this TRAFFIC information document justifies that further attention be placed on three additional issues:

1. Yemen, East and Southeast Asia remain important destinations for African rhino horn, with an apparent increasing trend in horn volumes leaving the continent. However, the precise nature of markets in East and Southeast Asia is not fully understood. For example, the degree of speculative buying of rhino horn, as compared to purchases to meet current market demand, has not been ascertained. It is therefore necessary to conduct updated end market research, including a detailed assessment of trade dynamics, enforcement, and status of horn stocks in key consuming nations.
2. In South Africa, a number of measures are recommended to address the emergence of more sophisticated criminal operations and the laundering of some horns acquired legally (e.g. white rhino hunting trophies and horns registered on private properties):
 - a. The introduction of a compulsory moratorium (currently voluntary) on domestic horn sales/transactions to reduce the risk of sale to illegal traders;
 - b. The completion of a national audit of horns in private possession to guide compliance measures; and
 - c. The commissioning of a national task force to finalize outstanding and large-scale investigations into rhino poaching and illegal horn trade.
3. With regard to black rhino trophy hunting in South Africa and Namibia, reconsideration of the quotas agreed at CoP13 (as requested by Kenya in CoP14 Doc 37.2) is not supported. Instead, the Secretariat's recommendations contained within CoP14 Doc. 54, together with the additional recommendations mentioned above, are deemed appropriate to address contemporary rhino horn trade concerns. TRAFFIC further recommends that legal provisions be developed by both countries ensuring that black rhino quota allocation are biologically sustainable, maximize incentives across sectors, reward good management, and ensure appropriate controls (as recommended by IUCN SSC African Rhino Specialist Group, Leader-Williams *et al.* (2005) and further development by the SADC RMG).

2. Introduction

This information document has been prepared by TRAFFIC as an addendum to CoP14 Doc. 54 *Rhinoceroses* Annex 1 (Emslie *et al.*, 2007). It specifically provides additional information on rhino-related crimes and trade dynamics in Africa (see CoP14 Doc. 54 section 2.3 *Trade*), as part of TRAFFIC's obligation to provide an assessment of poaching, illegal trade and stockpiles pursuant to Decisions 13.23, 13.24 and 13.25 and outcomes of the 53rd and 54th meetings of the Standing Committee.

By providing a contemporary assessment of rhino horn trade in Africa, this document serves three main purposes. Firstly, to provide factual information to support some of the findings and recommendations made in CoP14 Doc. 54 Annex 1. Secondly, to present a preliminary analysis of potential indicators that may strengthen future monitoring of rhino trade issues. Thirdly, this document explores some of the key issues contained within CoP14 Doc. 37.2 prepared by Kenya.

In terms of content, this document describes in more detail the sources of rhino horn within Africa, quantities of horn moving to illicit markets, and information on major trade routes and markets. It goes on to explore the conservation impact of illegal killing and the effectiveness of law enforcement responses by range States. Lastly, spatial and temporal trends are discussed in the context of influencing factors, together with recommended remedial actions to be considered in addition to those recommended by the Secretariat in CoP14 Doc. 54.

3. Methodology

The information presented in this report is largely derived from the TRAFFIC *African Rhino Crime (ARC) database*. Information contained within the ARC has been provided almost entirely by government conservation authorities. Due to the sensitive nature of most information on illegal rhino activities, the confidentiality of some crime data, and the understanding between TRAFFIC and range States regarding its analysis and usage, this document does not attribute findings and opinions directly to individual sources. Data were collected with the willing participation of government conservation authorities, and almost every range State has offered comments on draft versions of this document. From the outset, TRAFFIC would like to acknowledge all individuals who contributed.

The ARC is structured with three major components and contains data from 2000 onwards:

Component 1 - Populations: annual population numbers, detected mortalities and translocations are provided for every individual rhino population and species;

Component 2 - Poaching: detailed information is provided for each incident, including the date, location, species, method of killing, details on horn losses and recovery, origin of poachers, destination of horns, arrests and convictions; and

Component 3 - Seizures: detailed information is provided for each incident, including the date, location, species, number, weight, origin and destination of seized horn, arrests and convictions.

Discussions with wildlife enforcement officials from range States and relevant regional bodies helped to refine interpretation of horn trade routes and emerging dynamics. Due to the sensitive nature of much information, analysis of ARC data focused on the calculation of various *indicators* for two main reasons. Firstly, some countries prefer to maintain confidentiality on the presentation of raw crime incident data. Secondly, the presentation of indicators allows a more meaningful interpretation of crime information, whereas raw incident data is frequently misunderstood¹. The use of standardized indicators also allows for more accurate comparisons between different countries, and measuring changes over time (TRAFFIC, 1999). Table 1 provides an overview of the different indicators analyzed in this paper. It is envisaged that these indicators will be further refined in future.

Table 1

Overview of rhino crime indicators analysed for Africa, 2000-2005

Category	Description of indicator	Mode of calculating indicator
Severity of rhino crimes	Occurrence of rhino crime	Relative spatial distribution of rhino poaching and seizure incidents
	Relative poaching intensity	Proportion of all detected mortalities attributed to illegal killing
	Poaching impact on populations	Proportion of living rhinos killed illegally

¹ For example, if country X experienced 40 poached rhino in a two-year period, while country Y just 20, the popular perception is that country X is facing the highest levels of illegal activity. However, it could be possible that country X has ten times as many rhinos as country Y, or that poaching represented a tiny fraction of overall rhino mortalities in country X. Further, country X may have proceeded to recover most of the lost horn and convicted many suspects, while country Y had limited enforcement success.

Category	Description of indicator	Mode of calculating indicator
Effectiveness of management response	Horn recovery	Proportion of lost horns recovered through enforcement
	Arrests and convictions	Proportion of cases resulting in arrests, and the proportion of suspects convicted
Useful explanatory indicators	Rhino population performance	Population growth rate
	Patrol efficiency	Comparison of actual and expected rhino mortality detection rates

4. Overview of rhino horn trade dynamics within Africa

This chapter attempts to quantify the volumes of horn arising from various sources and to summarize the primary trade routes within Africa. The following section summarizes the importance of three main sources of horn for illegal markets: (i) poaching or thefts from natural mortalities; (ii) the commercial sale of horns derived from legal trophy hunts; and (iii) the theft or irregular sale of horns from government or private stockpiles.

4.1 Rhino Poaching and Thefts from Natural Mortalities

4.1.1 Poaching occurrences in Africa

During the six-year period between 2000 and 2005, confirmed cases of illegal killing accounted for a total of 252 rhino carcasses detected in seven African range States (Table 2). Over 90% of the reported poaching incidents were recorded in three countries: Zimbabwe, South Africa and Kenya (Figure 3).

The majority of illegally killed rhinos in Africa were shot (70%), with a further quarter snared. It should be noted that the procurement of meat from other species, not horn, was the cause of some snaring, most of which occurred in Kenya, South Africa and Zimbabwe. In terms of species, 54% of poaching incidents recorded in Africa during 2000-2005 involved Black rhinos *Diceros bicornis* and the remainder White rhinos *Ceratotherium simum*.

Table 2
Total numbers of rhinos killed illegally in Africa by species and poaching method, 2000-2005

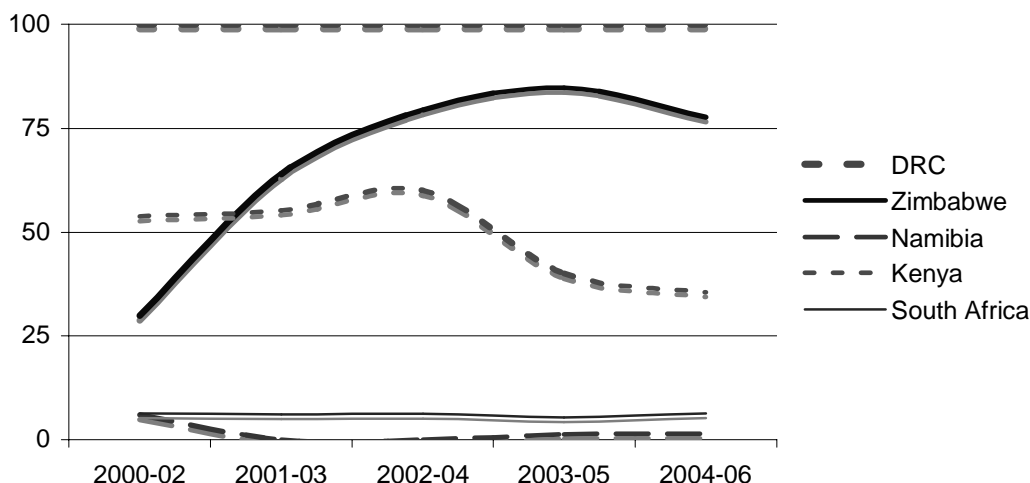
Mode of poaching	White rhinos	Black rhinos	Totals
Shot	74	77	151
Snared	20	32	52
Speared/stabbed/poisoned	10	2	12
Unknown	12	25	37
Totals	116	136	252

In terms of understanding illegal killing trends, observing changes in the absolute number of poaching incidents can be misleading since it does not take into account differing levels of patrol effort. Instead, a useful indicator is the proportion of total mortalities that are killed illegally, which provides a measure of *poaching intensity*. Figure 1 presents changes in poaching intensity since 2002 for the four range

States with largest rhino populations and the Democratic Republic of the Congo (DRC). While all carcasses detected in the DRC between 2000 and 2005 were killed illegally, the period 2003-2005 was particularly severe in terms of numbers. In Zimbabwe poaching intensity rose considerably up to 2005. In Kenya, poaching intensity peaked during 2001-2003, but has actually fallen in recent years.

Figure 1

Smoothed poaching intensity trends in five range States expressed as the percentage of detected mortalities attributed to illegal killing



Note: Since some detected carcasses in a given year may be more than one year old, data points are expressed as moving three-year windows, thus helping to reduce the degree of inaccuracy.

The two other major range States, South Africa and Namibia, experienced much lower poaching intensities throughout 2000-2006 (Figure 1). The data presented for South Africa² highlights the importance of monitoring such an indicator for poaching intensity; while one third of all poaching incidents recorded in Africa took place in South Africa, South Africa conserved 82% of Africa's rhinos in 2005 and the overall poaching intensity remained relatively low (poaching amounting to just 5% of all mortalities during 2002-2005, although it is acknowledged that relatively high numbers of poaching incidents have been experienced in some specific locations in South Africa).

4.1.2 Rhino horn thefts from natural mortalities

In addition to the removal of rhino horns at the time animals are illegally killed, some horns are also stolen from natural mortalities. Such theft of rhino horn can be significant, even in areas where rhinos are subject to relatively intensive monitoring and protection. For example, 16% of horns entering illegal trade from one South African province between 2000 and 2005 were stolen from natural mortalities³. According to TRAFFIC records, at least 25 horns stolen from natural mortalities were not recovered between 2000 and 2005.

4.2 Illegal, commercial sale of horns derived from legal trophy hunts

The annotations for the Appendix II listing of White rhinoceros *Ceratotherium simum* in South Africa, Namibia and Swaziland allows for the export of hunting trophies⁴ and live animals to appropriate destinations. In addition, South Africa and Namibia were each permitted an annual export quota of five male black rhino hunting trophies at CoP13 (Resolution Conf. 13.5).

² While illegal killing data was collected for every rhino population in South Africa, total mortality data was available from areas containing 72% of the black rhino population and 19% of the white rhino populations. The calculations for poaching intensity in South Africa and depicted in Figure 1 used this representative sample, which is sufficiently large enough to be representative of the entire country.

³ However, the provincial wildlife authority subsequently recovered 40% of these horns.

⁴ Swaziland has not, however, hunted any white rhino since the downlisting in 2004.

According to the UNEP-WCMC CITES trade database, white rhino hunting trophy/horn exports reported by South Africa totaled 718 between 2000 and 2005, while Namibia reported a further 11 trophies. Importing nations reported around half this volume, 384 and six respectively.

It is acknowledged that the majority of legally hunted rhino trophies exported from South Africa and Namibia have remained as *bona fide* personal hunting trophies. Indeed, until recently there has not been any particular reason to question that the purpose of rhino horn exports obtained from legitimate hunting operations was anything but 'hunting trophies', which have been imported into 41 countries since 2000. In a relatively new development, it appears that the existing legal measures to regulate white rhino trophy hunting in South Africa are being abused by illegal horn traders. For example, following the legal acquisition of horns as a hunting trophy, some individuals have subsequently mixed them with horns acquired illegally, or used the trophy ownership documentation in a fraudulent manner. The scale of this problem has grown significantly in the past two years – with uncertainty over the ultimate destination of trophies from over 50 rhinos in 2006 – and is an entirely new dimension to illicit rhino horn trade dynamics.

It should be recognized, however, that to date these practices have *not* impacted on the sustainability of the white rhino trophy hunting industry in South Africa, nor affected the ongoing growth in rhino populations of both species. Nevertheless, stricter measures are required in South Africa to more closely scrutinize and monitor trophy hunters. Further, the absence of follow-up registration and audit mechanisms for such valuable trophies needs to be addressed in most importing countries, to better ascertain the current presence, location and ownership of rhino horn trophies around the world.

4.3 Theft or irregular sale from government or private stockpiles

Stockpiles of rhino horn may accumulate in government stores from a number of different origins, including discovered mortalities, dehorning/tipping exercises, confiscations and accidental knock-offs. In some countries, rhino horns are also held in private hands (e.g. pre-Convention personal items, hunting trophies and horns from privately-owned rhinos).

As of early 2007, TRAFFIC has documented a total of just over 20 000 kg of rhino horn under government and private ownership in Africa. South Africa, Zimbabwe and Namibia held over 90% of this stockpile by weight.

In terms of minimizing the risk of horn flowing into illegal markets, the need to ensure adequate horn stockpile management is as important as traditional field protection. To prevent the leakage of stockpiled horns into illegal trade chains, CITES Resolution Conf. 9.14 (Rev. CoP13) recommends that Parties ensure adequate marking, registration and security mechanisms. TRAFFIC has published a manual⁵ outlining recommended minimum standards for rhino horn stockpile management based upon 'best practice' guidelines in Africa, and are being implemented by a number of rhino range States (Milledge, 2005).

With respect to rhino horn stockpiles in Africa and their potential leakage into illegal trade, three issues can be highlighted:

4.3.1 Thefts from State-owned strong rooms

Whilst several incidences of horn thefts have been documented in recent years, most cases have involved relatively small, field-based stockpiles. For example, one black rhino horn was stolen from a government store in Serengeti National Park in Tanzania during 2004, while six horns were discovered stolen from Meru National Park in Kenya during 2007. Overall, large-scale thefts of rhino horns from centralized strong rooms⁶ are not believed to have occurred in Africa since 2000.

A TRAFFIC review of stockpile management practices in east and southern Africa during 2002-2005 showed that marking, measuring, registration and security measures were not only improving in all

⁵ *The report, Rhino Horn Stockpile Management: Minimum standards and best practices from east and southern Africa, is also available on-line at www.traffic.org*

⁶ *In most African range States, rhino horn is safe-guarded in the same location as elephant ivory. Very small rhino horn stockpiles are known from the two countries where large ivory thefts have been recorded within east and southern Africa since 2000 – around 1.7 tonnes from Ethiopia during the first half of 2003 (Milledge and Abdi, 2005) and as much as 1.5 tonnes of ivory went missing from Pemba, Mozambique, during early 2006 (refer to CoP14 Doc. 53.2). Large-scale ivory thefts are not known to have occurred where the larger rhino horn stockpiles are found.*

major range States, but also reaching or surpassing the minimum 'best practice' standards in most cases. However, a major weakness in many range States remains the absence of rigorous audit and reconciliation mechanisms to verify horn accumulation and storage over time (Table 3).

Table 3

State of stockpile management in east and southern Africa

Stage of stockpile management	2002 rating	2005 rating	Areas still needing attention
Collection from the field	4	5	Further scene of crime training
Horn marking and measuring	3	3	Marking techniques in some countries
Auditable paper trail	3	3	Filing systems
Comprehensive registers	1	2	Reserve and key control registers
Centralization and storage	4	4	Disposal of insect-infested stock
Audits and reconciliation	1	1	Routine departmental reconciliations
Legislation and policies	3	4	Internal directive on stockpile management

Note: Rating of 1 (low) to 5 (high) based on a percentage scoring following the evaluation of the implementation of minimum standards for stockpile management for 13 wildlife authorities in east and southern Africa. Evaluations took place in 2002 and 2005 and covered 26 minimum standards against the seven issues assessed in the table.

4.3.2 Sale of unregistered horn in private hands

Ongoing challenges are apparent within South Africa concerning the existence and registration of horns under private ownership. Firstly, the actual existence of officially registered horns had not been verified for many years, although a nationwide audit was initiated during 2006. Whilst the results have not been finalized, it is already apparent that some registered horns are no longer in the possession of the registered owner in several provinces.

Secondly, there remains a mismatch between the quantity of *expected* (i.e. according to rhino population sizes and expected accumulation rates) and *officially registered* horn under private ownership. In 2001, a survey of the status of white rhinos on 242 private properties in South Africa highlighted the scale of this discrepancy (Castley and Hall-Martin, 2003). Owners reported a total of just 291 horns (estimated weight of 578 kg), which was equivalent to less than five per cent of the total horn stockpile in South Africa. In contrast, the private sector held up to a quarter of the live white and black rhino population in the country. Totalling more than 3700 animals, the accumulation of horns from natural and management-related causes should result in significantly higher numbers of horn in private hands than currently reported.

Of related concern is the reluctance by some private rhino owners to comply with legal registration requirements for rhino horn. Castley and Hall-Martin (2003) found that only 30% of the privately owned horns were reportedly registered with the respective provincial nature conservation authorities. During 2006, extensive provincial wildlife investigations discovered that some private rhino owners in South Africa have indeed sold unregistered horn to suspects linked to illegal horn traders. Whilst investigations continue within South Africa, it is imperative to complete the national audit of privately held rhino horns and to enforce national regulations on their marking and registration following their imminent promulgation. Audits of rhino horns in private possession are also recommended for Kenya, Namibia and Zimbabwe.

4.3.3 Illegal export of horns following legal domestic purchase of registered horns

Current South African legislation permits the internal sale of rhino horn, providing that the horn does not leave the country for commercial purposes. In recent years, it has become evident that illegal horn trading networks have been legally acquiring such rhino horns, but with the intention of onward commercial sale outside South Africa. A voluntary moratorium on internal horn sales has helped the situation, although it is recommended that this moratorium become compulsory.

4.4 Estimating the total volume of horn traded onto the illegal market

The quantity of rhino horn destined for illegal markets was calculated using known poaching incidents, thefts and other irregular acquisitions outlined in sections 0 to 0 above. During 2000-2005, a minimum of 664 horns was acquired with the intention of illicit trading (Table 4). Most of these horns were derived from poached rhinos.

Law enforcement action resulted in 42% of these horns being recovered, ranging from rapid response in protected areas to investigations and confiscations in urban centres. Nine countries successfully recovered a total of 278 horns during 2000-2005 (Table 4).

As a result of these recoveries, the minimum amount of horn calculated to have entered the illegal market from Africa during this period was 386, or an annual average of 64 horns. The majority (86%, equivalent to 49 horns annually) came from southern Africa, and the remaining 15 horns annually from eastern Africa (Figure 4a). The actual quantity of lost horn is almost certainly higher due to a combination of undetected poaching or thefts (especially from large rhino areas) and as yet undetected, illegal sale of some private stocks.

Table 4

Calculation of the total quantity of rhino horn flowing to illegal markets in Africa, 2000-2005

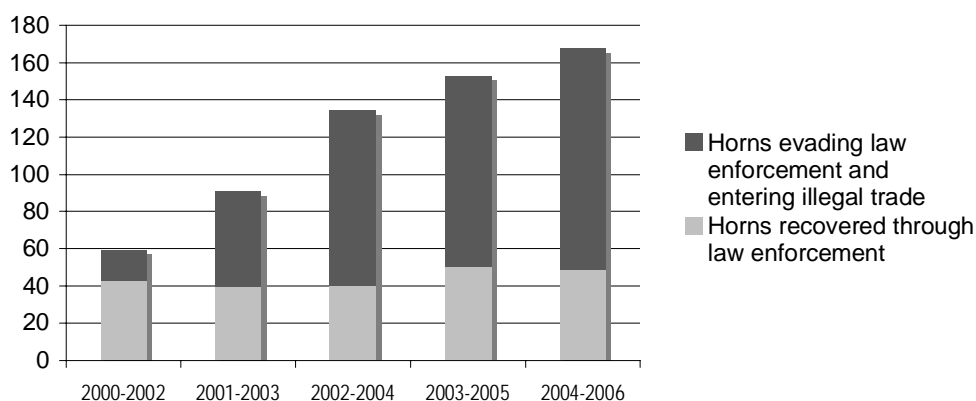
Description of source or recovery of horns	No. of horns
<i>Source of horns to illegal markets</i>	
Horns taken from poached rhinos	535
Horns stolen from natural mortalities	25
Horns suspected sold from legal trophy hunts or private stocks	> 100
Thefts from government stockpiles	4
<i>Subtotal:</i>	> 664
<i>Recovery of horns by government enforcement agencies</i>	
Recoveries in the field	105
Confiscations/seizures	173
<i>Subtotal:</i>	278
Balance of horns lost to illegal trade chains	386

Note: Count of horns taken from poached rhinos includes those missing from 22 black rhino carcasses found in Tsavo East National Park, Kenya, during 2006 and believed to have been poached during 2001-2004.

Using average horn weights for black and white rhinos, these 64 horns were equivalent to an annual average of 102.4 kg entering illegal trade during 2000-2005. This can be compared to the devastating poaching era during 1970-1986 when an estimated 2,648 kg horn left Africa annually (Martin and Ryan, 1990). Despite being far lower volumes in current trade than the 1970-1980s, available information gives cause for concern by suggesting a steadily upward trend in the volume of horn entering illegal trade since 2000, whilst showing no fundamental change in the number of horns recovered through law enforcement (Figure 2). Horns derived from sources other than poached rhinos comprise a significant part of this trade (see sections 0 and 0).

Figure 2

Annual average number of horns recovered and lost to illegal trade in Africa, 2000-2006

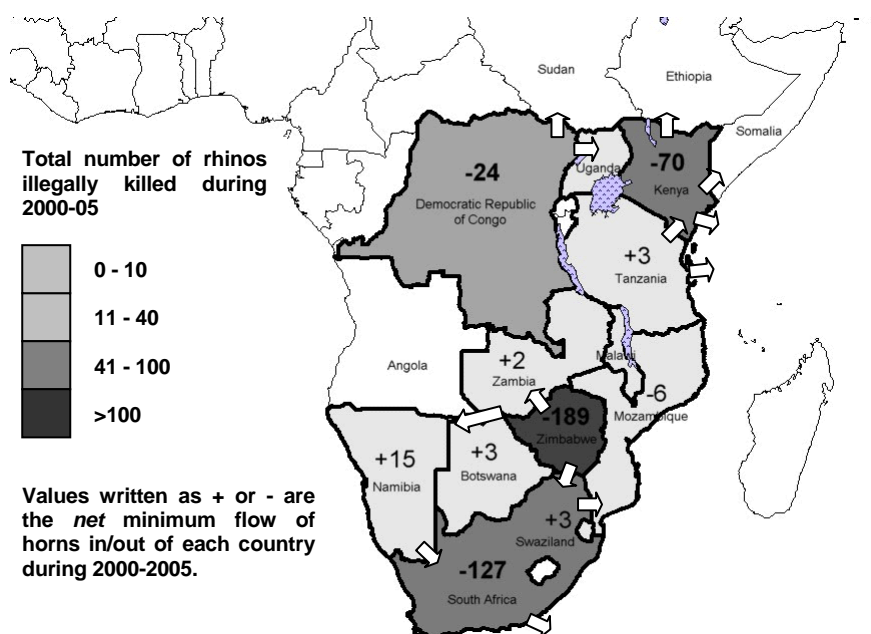


Note: Bar chart plotted as moving three-year windows to reduce the inaccuracy of some data, especially imprecise time periods that private horn stocks were sold to the illegal market.

Almost all horn sourced from Africa continues to be sold illicitly to East and Southeast Asia for use in traditional Asian medicine, and to Yemen for the production of *jambiya* (traditional dagger) handles. China, Hong Kong, the Philippines, Singapore, Thailand, South Korea and Vietnam have all been implicated as having a role in the trade in horn coming from Africa, with particular concern over the increasing and highly organized role of Vietnamese nationals since 2004.

Figure 3

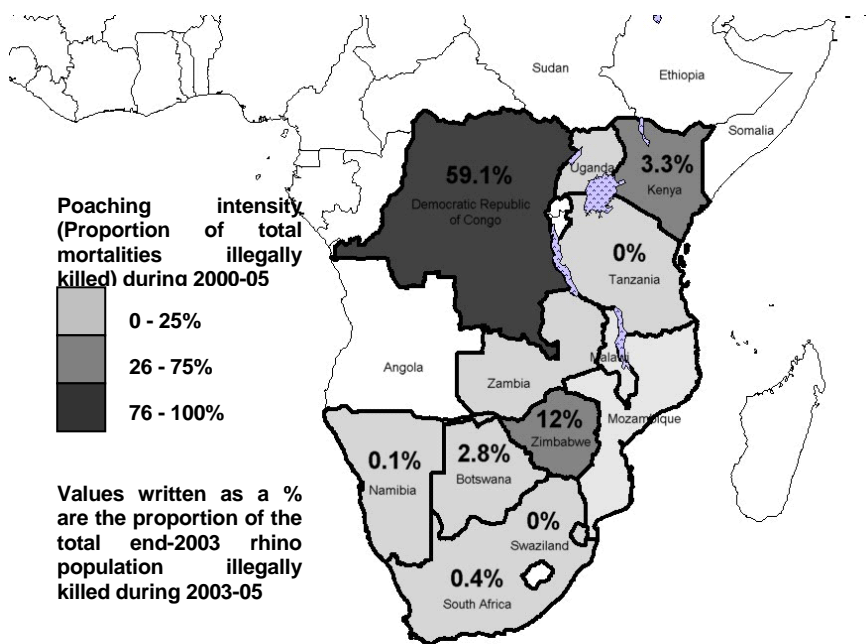
(a) Distribution of rhino poaching incidents (shaded), primary trade routes (arrows) and numbers of horns lost to illegal trade (numeric values), 2000-2005



For example, accounting for recoveries a minimum total of 70 horns were lost to illegal trade from Kenya during 2000-2005. In Namibia, more horns were recovered than could have been lost from illegal killing, resulting in a net recovery of 15 horns that probably came from another country.

Note: Relatively little knowledge exists on trade routes in Zambia, Mozambique, Tanzania and Ethiopia.

(b) Relative poaching intensity (shaded) and impact on populations (numeric values) in African rhino range States, 2000-2005



Note: A confidential briefing on horn trade routes and markets will be sent directly to range States.

4.5 Use of African rhino products in traditional medicine and cultural artifacts

In addition to the horn markets of Yemen, East and Southeast Asia, two other small-scale markets for rhino products are worthy of mention. Firstly, a few isolated incidents illustrate the removal of rhino horn and other body parts for use in traditional medicine, both in Africa and East/Southeast Asia. For example, the sexual organs, tail, teats and hind legs were removed from a female black rhino speared to the west of Masai Mara Game Reserve, Kenya, in June 2000, although the horns were left intact. Martin and Vigne (2003) were unaware of a similar incident anywhere else in East Africa, and no further examples were found in the analysis of all poaching incidents within Africa since 2000. During 2004, two incidents in South Africa involved the attempted export (by Vietnamese) of rhino genitals and dried intestines for traditional medicinal use; these incidents highlight that overseas demand exists for rhino products in addition to horn.

Secondly, the illicit trade in cultural artifacts fashioned from wildlife products including rhino horn emerged in Kenya during the early 2000s. Most of these items were being marketed to the US before the individuals were discovered and enforcement action taken. However, this remains a market that requires ongoing monitoring.

5. Impact of illegal trade on rhino population status

Section 0 and Figure 3a highlighted how the absolute numbers of rhinos illegally killed within different range States is useful in determining the relative importance of different countries as a *source* of horns to the illegal market. However, this type of incident data does *not* give an accurate picture of where poaching pressure is most serious in terms of *intensity* or *impact* on the rhino populations. Three indicators are useful to better understand poaching intensity and impact, the first two of which are presented in Figure 3b:

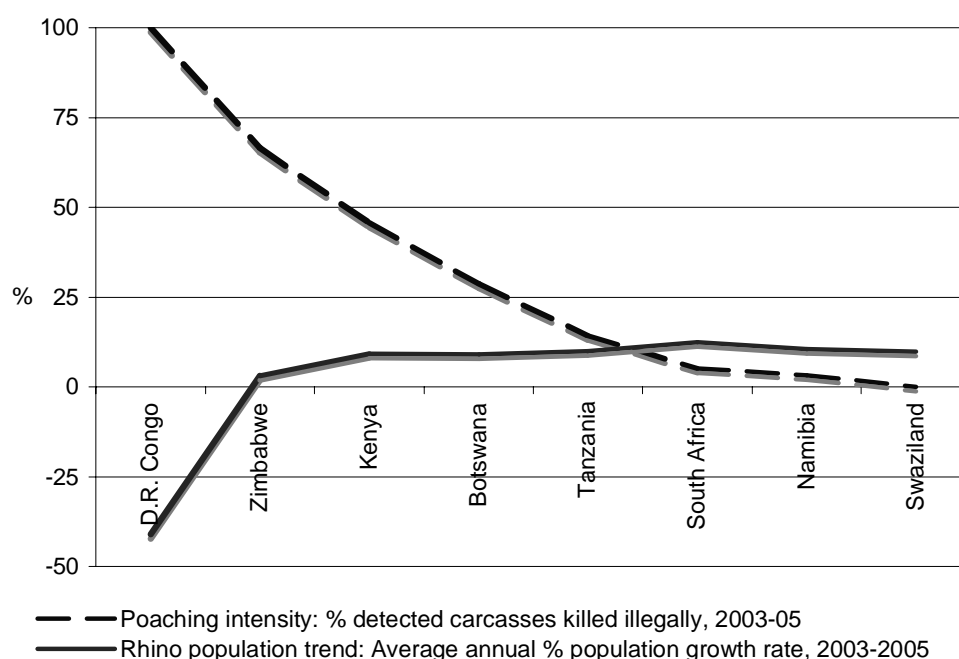
1. *Proportion of carcasses killed illegally:* range States where a higher proportion of detected carcasses were poached indicates high poaching intensity;
2. *Percentage of population killed illegally:* a high proportion of living rhinos killed illegally is more likely to be unsustainable; and
3. *Trend in rhino population numbers:* useful to gauge rates of population growth/recovery.

Figure 3b and the dotted line in Figure 4 shows how poaching intensity varied greatly among range States during 2002-2005. For example, not a single mortality was attributed to illegal causes in Swaziland, whereas all carcasses found in DRC over this period were poached. The highest levels of poaching intensity were witnessed in DRC, Zimbabwe and Kenya (also depicted as a time series in Figure 1). Poaching has caused greater impacts on the rhino populations in DRC and Zimbabwe than any other range State in recent years (Figure 3b). During 2003-2005, the DRC rhino population declined by over 40 per cent per annum, while the total black and white rhino population in Zimbabwe grew at just three per cent per annum (solid line in Figure 4).

For other range States, the net annual increase in national populations (black and white rhinos combined) exceeded 6% (solid line in Figure 4), accounting for count variance in annual estimates from the larger populations. Kenya was a notable range State in this regard, with good population growth between 2003 and 2005 despite the fact that illegal killing caused more than 40% of mortalities.

Figure 4

Graph showing relative poaching intensity and population trends for major range States



6. Effectiveness of law enforcement responses to rhino crimes

Effective law enforcement responses to rhino-related crimes are important for two main reasons. Firstly, it helps to reduce to a minimum⁷ the quantity of rhino horn flowing onto the illegal market. Secondly, effective enforcement is important in reducing the impact of illegal activity on rhino populations. This applies to both rhino populations in the country in which enforcement action is being taken, as well as neighbouring countries since illegal trading networks operating with relative impunity may soon set up cross-border operations.

A combination of adequate legislation, capacity and the implementation of appropriate enforcement strategies are needed to successfully prevent and respond to rhino crimes. Two useful indicators of law enforcement response to rhino-related crimes include:

1. *Arrest and conviction rates*: the proportion of rhino crimes (e.g. poaching and seizure incidents) where suspects were arrested, and the proportion of cases where arrests were made resulting in successful convictions. There was insufficient data from all range States at the time of this analysis to present these indicators.

⁷ It is generally recognized that a certain level of 'background' rhino poaching and illegal trade is inevitable and realistically cannot be totally eliminated.

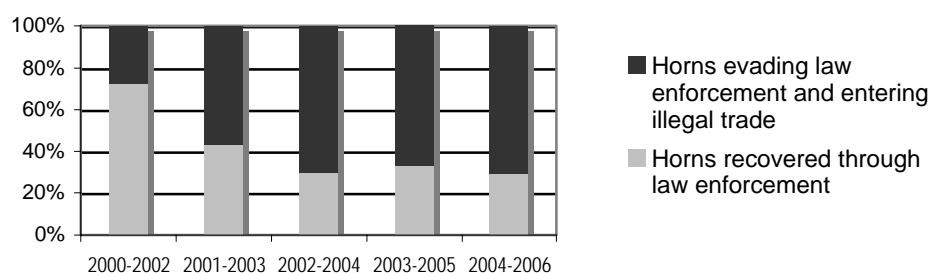
2. *Horn recovery rate*: the proportion of horn potentially lost from poached rhinos and other sources (e.g. stockpile thefts or illegal sales) later recovered through field recoveries and seizures.

Overall, 42% of all horns potentially lost to illegal trade during 2000-2005 were recovered, of which about one-third were recovered in the field as part of rapid responses to poaching and two-thirds from subsequent seizures (Table 4). Horn recovery rates varied amongst different range States, with five countries actually recovering more horns than could be accounted from detected poached rhinos or other sources (Namibia, Swaziland, Botswana, Zambia and Tanzania; Figure 3a). Of the remaining countries, South Africa had the highest horn recovery rate (54%), followed by Kenya (47%), Zimbabwe (13%) and DRC (8%).

A concern is the increasing proportion of horn lost to illegal markets since 2000 (Figure 5). Available data from Kenya and South Africa indicates that declining horn recovery rates is largely attributed to increased organization of illegal poaching and horn trading networks. As a result, horns are acquired and moved using far more efficient and clandestine *modus operandi*. A drop in wildlife enforcement budgets and capacity may also have had an effect. South Africa has taken highly commendable steps to investigate organized, rhino-related crimes linking different parts of the country. One challenge to completing these outstanding investigations is the limited jurisdictions of the various provincial authorities and law enforcement institutions involved.

The following four cross-border combinations are in need of strengthened collaboration: Zimbabwe-South Africa, South Africa-Mozambique, Zimbabwe-Zambia and DRC-Sudan.

Figure 5



Change in the proportion of horns entering illegal trade subsequently recovered, 2000-2006

7. Discussion and Recommendations

7.1 Summary of spatial and temporal patterns in rhino crimes

Three main patterns are evident from rhino-related crime data analyzed in this report. Firstly, the overall volume of horn entering illegal trade has increased since 2000. This matches a switch to commercial rhino poaching targeting horn in Kenya, Zimbabwe and DRC during the period 2001-2003 (du Toit, 2002; Hillman Smith *et al.*, 2003; Matipano, 2004; Mulama, 2002). Also key to this development has been the rising prominence of horn sources other than poaching, including horns acquired and laundered from private stockpiles and legally trophy hunted white rhinos. This laundering does not appear to have negatively affected rhino population performance, but has contributed to the quantities of horns entering illegal trade.

Secondly, the intensity of poaching, as measured using the proportion of total mortalities that were killed illegally, rose to levels of serious concern in Zimbabwe, but declined in Kenya. Rhino populations in Zimbabwe and DRC have experienced the greatest impacts of poaching. Poaching does not appear to have prevented positive growth in total rhino populations in other range States.

A third pattern in rhino-related crimes was the overall decline in the proportion of enforcement-related horn recoveries. This appears to be most linked to the increased organization of criminal horn trading networks operating in Africa. Several wildlife enforcement officials have expressed concern over the increased levels of sophistication by which some Southeast Asian horn trading networks operate, which may pose a more serious threat to rhino populations if left unaddressed.

A summary of the main rhino crime indicators is presented in Table 5 for the eight largest rhino range States. These countries can be placed into four groups according to their similarities.

Group A: Democratic Republic of Congo and Zimbabwe (High concern)

These two countries are characterized by having not only the highest severity of poaching (i.e. poaching pressure and impact) but also low ratings for management response effectiveness. In DRC, more than 60 per cent of the rhino population in DRC was illegally killed during the three-year period, 2003-2005. This coincided with a switch from meat to ivory poaching in Garamba National Park witnessed in the second half of 2003 (Hillman Smith *et al.*, 2003). Strengthened park management since 2005 has led to a reduced wildlife poaching pressure in general. In Zimbabwe, a very high number of rhino crimes took place, and poaching accounted for two-thirds of all rhino mortalities. Translocation of populations under threat has helped to reduce the impact of poaching, but poaching intensity has increased. Illegal killing during 2003-2005 affected 12% of the 2003 rhino population, and recent data shows a downturn in some key populations. Further, enforcement follow-up has had limited effectiveness with low levels of arrests and prosecutions.

Table 5
Selected African range State indicators for rhino crimes

Description of indicator:	Sample size	Poaching pressure	Impact of poaching	Management response
	No. rhino crimes ^α , 2000-05	Percentage of all detected mortalities due to poaching, 2000-06	Percentage of 2003 population poached during 2003-05	Percentage of estimated horns lost ^β to illegal markets and then recovered through enforcement, 2000-05
Country				
D.R. Congo	14	100	59.1	8
Zimbabwe	105	69.2	12.0	13
Kenya	64	41.1	3.3	47
South Africa	86	6.6	0.4	54
Swaziland	2	0.0	0.0	n/a
Namibia	20	2.7	0.1	288
Tanzania	3	14.3	0.0	200
Botswana	5	28.6	2.8	175

Notes: ^α Rhino crimes include both poaching and seizure incidents only in this table.

^β Calculation of horns supplied to illegal markets included horn from poached rhinos, thefts from natural mortalities and stockpiles, and acquisition of hunting trophies or private stock.

Zambia and Mozambique are not included in the table due to lack of data, but are implicated as transit countries for a portion of horn leaving both Zimbabwe and South Africa. Both countries have relatively small rhino populations and are negligible sources of horn.

Group B: Kenya and South Africa (Medium concern)

Kenya and South Africa have both experienced a general rise in the proportion of horn entering illegal trade (not recovered through enforcement), indicative of the enforcement challenges following

increased organization of the illegal horn trading networks (and possibly some capacity shortages within some conservation authorities). For example, the proportion of recovered horn decreased from 72% during 2000-2002 to 23% during 2003-2005 in Kenya, and from 64% to 49% in South Africa. In the case of Kenya, 40% of all detected mortalities during 2000-2006 were caused illegally although poaching intensity appears to have declined. Some rhino populations have suffered from illegal killing but the national totals continued to rise. In South Africa, poaching intensity has remained low and constant, with illegal killing having a minimal impact on rhino population performance. Greater concern lies in South Africa's role as a source of relatively large quantities of horn for illegal markets, including horns acquired through legal means on private properties but subsequently laundered into illegal trade (although it should be noted that the total rhino population in the private sector nevertheless continue to grow, and imminent promulgation of national regulations on threatened and protected species will help).

Group C: Swaziland and Namibia (Low concern)

Swaziland and Namibia are two range States that have managed to reduce the occurrence of poaching to minimal levels (or zero in the case of Swaziland). In addition, Namibia has played a major role in intercepting horn in transit from neighbouring countries, whilst enforcement deterrents appear to have greatly reduced the transit of horns through Swaziland. As a result of low poaching threat and effective metapopulation management, the rhino populations in these countries are growing at some of the highest rates in Africa

Group D: Tanzania and Botswana (Not determined – insufficient information)

Whilst the sample size of rhino crimes is low for this group, illegal killing of rhinos does not appear to provide a very serious threat to the rhino populations (although one concern in Tanzania is data deficiency, with low detection rates of natural mortalities within heavily wooded parts of the rhino range). Poaching threat needs to be monitored closely in Botswana. Both countries have seized horns in transit, albeit at much lower levels than countries in Group C.

7.2 Important factors influencing illicit rhino horn trade in Africa

Wildlife and law enforcement experts consulted in most range States concurred over the importance of a few key factors influencing patterns of illegal killing of rhinos and rhino horn trade in Africa. Firstly, *sustained demand* for rhino horn is being felt in most range States. The majority of horns coming from Africa are destined for Asian markets, and intelligence officials indicate that this demand is most closely linked to the increasing number of East/Southeast Asian nationals resident in Africa, as well as positive economic growth particularly in China.

Secondly, conditions within the two countries experiencing the highest poaching pressures and impact illustrate the importance of *socio-economic stability and good governance*. In DRC, the devastating poaching of the last remaining northern white rhino population was influenced by proximity to an international border, political instability and easy access to weapons by poachers (Hillman Smith, 2006). Declining government operational budgets, land use changes and socio-economic hardships in Zimbabwe were reported to be major factors that were weakening governance structures, thus reducing management effectiveness. In fact, many rhino losses in Zimbabwe involve animals caught in snares targeting wild meat rather than rhinos for their horns.

A third influencing factor is the increased levels of *criminal organization* within rhino poaching and horn trading networks. This matches findings from the most recent ETIS analysis of illegal elephant ivory trade (see CoP14 Doc. 53.2). Rhino poaching gangs in two countries were reported to operate more efficiently than previously experienced, indicating the presence of clear conduits and better organized networks that also operate across national borders. Further, confidential sources indicated that some illegal trading networks have links with other highly lucrative natural resource trades, including abalone, ivory, live game and diamond smuggling.

7.3 The influence of previous CITES decisions on illegal rhino activity

With respect to CoP14 Doc. 37.2, it is pertinent to comment on the effect of CITES decisions on rhino poaching and horn trade. In this document, Kenya is requesting the reconsideration of the black rhino annual export quotas for hunting trophies for Namibia and thus repeal Resolution Conf. 13.5 *Establishment of export quotas for black rhinoceros hunting trophies*. The document contends that

Resolution Conf. 9.21 (Rev. CoP13) sub-paragraph (b)(ii) no longer holds true, and provides information in support of the following statement:

Since CoP13, new information on management problems in Namibia and a rise in rhinoceros poaching in South Africa has come to light, which questions whether the rhinoceros populations can sustain such an annual quota in the future. Moreover, the allocation of the quotas was highly controversial at CoP13. Several range States, including Kenya, believed that allowing hunting of black rhinoceros could have a negative impact on their own populations.

It should be noted that neither the analysis of rhino crime information from African range States nor discussions with numerous wildlife enforcement officials supports the claims made in CoP14 Doc. 37.2 (Table 6). However, as documented in this information document, there do exist several genuine issues of concern regarding rhino poaching and horn trade in Africa. It is believed that the recommendations proposed by the Secretariat in CoP14 Doc. 54 are best placed to address such issues within the CITES context. Additional recommendations, including measures to strengthen controls in the legal white rhino hunting industry within South Africa, are provided in the next section.

Table 6
Assessment of issues raised in CoP14 Doc 37.2

Issue raised in CoP14 Doc 37.2	Summary of information collected by TRAFFIC
Allowing hunting of black rhinoceros could have a negative impact on populations in other range States	<p>Logic would not support this proposition since Yemen and East/Southeast Asian markets for rhino horn do not differentiate white and black rhino horns, and no previous linkage has occurred in the case of white rhino hunting that has taken place in South Africa for much longer (since 1968) and at higher quantities (30-70 hunted annually for numerous years, compared to just six black rhinos during 2005-2006).</p> <p>Out of a total of 320 rhino crimes recorded in Africa during 2000-2005, not a single case linked legal black rhino hunting to a poaching or seizure incident. Further, wildlife enforcement officials from seven range States (including Kenya) did not hold intelligence information to support such a linkage.</p>
A rise in rhinoceros poaching in South Africa	<p>Whilst the absolute numbers of poached rhinos has fluctuated during this review period in South Africa, including sporadic peaks of illegal activity in some parks, available data suggest that the poaching intensity remained low and has changed very little since 2000 (see Figures 1 and 4b).</p>
Management problems in Namibia	<p>Of all African rhino range States, Namibia arguably has the most positive assessment for management effectiveness: one of the highest rhino population growth rates (over 6% annual growth in most populations between 2003 and 2005); very low poaching intensity (only 2.7% of detected mortalities caused by illegal killing during 2000-2006) and impact (just 0.1% of the total population in 2003 killed illegally during 2002-2005); and the highest horn recovery rate.</p>
Doubts as to whether the rhino populations can sustain such an annual quota in the future	<p>Populations of both species continue to grow at very favourable rates in South Africa and Namibia. Of all major range States, illegal killing has the lowest impact on rhino populations in these countries.</p>

7.4 Recommendations

The results from this assessment of illegal rhino activity in Africa add further support to the recommendations made by the Secretariat in CoP14 Doc. 54. In particular, this TRAFFIC information document provides clear justification for greater emphasis on DRC and Zimbabwe, both in terms of support from other CITES Parties and assessing the implementation of Resolution Conf. 9.14 (Rev. CoP13). The apparent increasing trend in horn volumes leaving Africa and the existence of sophisticated criminal operations involving several countries support the recommended decisions to more closely examine cross-border collaboration, the accumulation of horn stocks (including trophies) and illegal trade flows.

With regard to ongoing reporting pursuant to Resolution Conf. 9.14 (Rev. CoP13), the type of indicators presented in this document should prove useful in understanding future dynamics. As detailed in CoP14 Doc. 54, poaching and the illegal trade in rhino horn is also an issue for Asian rhinos. To fully understand the trends in Asian rhino range States, and possible linkages with horn flows from Africa, it is important that a similar analysis is carried out for Asian rhinos.

The analysis presented in this TRAFFIC information document justifies that further attention be placed on three additional issues:

1. Yemen, East and Southeast Asia remain important destinations for African rhino horn, with an apparent increasing trend in horn volumes leaving the continent. However, the precise nature of markets in East and Southeast Asia is not fully understood. For example, the degree of speculative buying of rhino horn, as compared to purchases to meet current market demand, has not been ascertained. It is therefore necessary to conduct updated end market research, including a detailed assessment of trade dynamics, enforcement, and status of horn stocks in key consuming nations.
2. In South Africa, a number of measures are recommended to address the emergence of more sophisticated criminal operations and the laundering of some horns acquired legally (e.g. white rhino hunting trophies and horns registered on private properties). Measures to be considered include:
 - a. The introduction of a compulsory moratorium (currently voluntary) on domestic horn sales/transactions to reduce the risk of sale to illegal traders;
 - b. The completion of a national audit of horns in private possession to guide compliance measures; and
 - c. The commissioning of a national task force to finalize outstanding and large-scale investigations into rhino poaching and illegal horn trade.
3. With regard to black rhino trophy hunting in South Africa and Namibia, reconsideration of the quotas agreed at CoP13 (as requested by Kenya in CoP14 Doc 37.2) is not supported. Instead, the Secretariat's recommendations contained within CoP14 Doc. 54, together with the additional recommendations mentioned above, are deemed appropriate to address contemporary rhino horn trade concerns. TRAFFIC further recommends that legal provisions be developed by both countries ensuring that black rhino quota allocation are biologically sustainable, maximize incentives across sectors, reward good management, and ensure appropriate controls (as recommended by IUCN SSC African Rhino Specialist Group, Leader-Williams *et al.* (2005) and further development by the SADC RMG).

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