

# Population and Poaching of African Rhinos across African Range States



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# SECTION 1

## Introduction

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Evidence on Demand was requested by DFID to carry out a rapid desk-based review of numbers and poaching rates of African Rhinos in Africa and in the four range-states: Kenya, Namibia, South Africa and Zimbabwe. In 2008 rhino poaching peaked in Zimbabwe and started to escalate in the major range state South Africa. This short report provides data in response to the following questions: 1) What is the trend in Rhino species numbers 2008 – 2012? 2) What is the trend in poaching rates 2008 – 2013 to date?

This data will be used to inform the establishment of a baseline against which progress can be made by the UK Government in addressing the complexity of challenges within, and arising from, the illegal wildlife trade. Findings are presented in the brief narrative below.

# SECTION 2

## The trend in Rhino species numbers

### 2.1 Africa

Data for Africa on species numbers for the white rhino and black rhino were obtained from the International Union for Conservation of Nature (IUCN) Species Survival Commission's (SSC) African Rhino Specialist Group (AfRSG) who have compiled Africa-wide data on species numbers and poaching rates for the year ends 1992, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2010 and 2012<sup>1</sup>. For individual range states, species numbers data could be analysed for the years 2007, 2010 and 2012. This information is displayed in Table 1. The latest revised figures for December 2012 have been used.

	Species	White Rhino			Black Rhino			Total B & W		
	Year	2007	2010	2012	2007	2010	2012	2007	2010	2012
"Big 4" Rhino Range States	Kenya	303	365	394	577	594	631	880	959	1,025
	Namibia	370	469	524	1,435	1,750	1,750	1,805	2,219	2,274
	South Africa	16,273	18,796	18,933	1,488	1,915	2,068	17,761	20,711	21,001
	Zimbabwe	313	290	284	546	431	424	859	721	708
	<b>Total</b>	<b>17,259</b>	<b>19,920</b>	<b>20,135</b>	<b>4,046</b>	<b>4,690</b>	<b>4,873</b>	<b>21,305</b>	<b>24,610</b>	<b>25,008</b>
	<b>Contribution to continental total (%)</b>	<b>98.8%</b>	<b>98.8%</b>	<b>98.6%</b>	<b>95.7%</b>	<b>96.1%</b>	<b>95.9%</b>	<b>98.2%</b>	<b>98.3%</b>	<b>98.0%</b>
Africa	<b>Total</b>	<b>17,475</b>	<b>20,165</b>	<b>20,430</b>	<b>4,230</b>	<b>4,880</b>	<b>5,080</b>	<b>21,705</b>	<b>25,045</b>	<b>25,510</b>

**Table 1 Estimated numbers of African rhino by range state as of 31 December 2012 (Data from IUCN SSC AfRSG)<sup>1</sup> (Species totals rounded to nearest 5).**

i. <sup>1</sup> Data extracted from: Emslie R., Milliken, T., Talukdar, B., (2012) *African and Asian Rhinoceroses – Status, Conservation and Trade, A report from the IUCN Species Survival Commission (IUCN/SSC) African and Asian Rhino Specialist Groups and TRAFFIC to the CITES Secretariat, pursuant to Resolution Conf. 9.14 (Rev. CoP15), CoP16 Doc. 54.2-rev 1* and; Emslie, R. et al., (2013) *African Rhinoceroses – Latest trends in rhino numbers and poaching. An update to Doc 54-2-Annexe 2 from the IUCN Species Survival Commission's (IUCN/SSC), African Rhino Specialist Group to the CITES Secretariat pursuant to Resolution Conf. 9.14, (Rev. CoP15) and Emslie, R.H. (2013b) Wild African Rhino Population Sizes, Numbers and Trends, including AfRSG rated populations and by management model. Section 4 in Confidential Full and Abridged Proceedings of the Eleventh Meeting of the IUCN African Rhino Specialist Group held at Naro Moru River Lodge, Kenya from 17-22 February 2013 (Cathy Dean – compiler 2013)*



### 2.1.1 White Rhino

Between 2007 and 2012 the number of white rhino increased by 16.9% from 17,475 to 20,430. Numbers increased by 4.9% per annum between 2007 and 2010 from 17,475 to 20,165 and by 0.7% per annum between 2010 and 2012<sup>1</sup>. This slow-down in growth reflects the impact of increased poaching as well as, in part, possibly being an artefact of conservatively using the same estimate for the Kruger National Park (the largest white rhino population) due the postponement of the helicopter block count planned in 2012. The intensive helicopter block count has been re-scheduled for 2013 and new revised estimates for this Park will therefore be available later in 2013.

### 2.1.2 Black Rhino

Between 2007 and 2012 the number of black rhino increased by 20.1% from 4,230 to 5,080. Estimated numbers of black rhino increased by 4.9% per annum between 2007 and 2010 (4.7% if a less conservative figure was used for the second largest population in 2007) and by 2.0% per annum between 2010 and 2012<sup>1</sup>.

The black rhino numbers show a similar trend to the white rhino data with a slowing of the growth rate in black rhino numbers from 2010-2012 primarily reflecting the impact of the increased poaching rates. To a small degree this was in part an artefact of the use of a greatly improved and more accurate (and larger) population estimate for Africa's second largest black rhino population in 2010 and the use of a more conservative lower 2007 estimate for this population due to the less accurate (less precise and more biased) population survey methods used at that time. The AfRSG recognised that this population in 2007 could well have been higher (shown by some additional numbers in a speculative guesstimate column not included in compiling the country and continental totals).

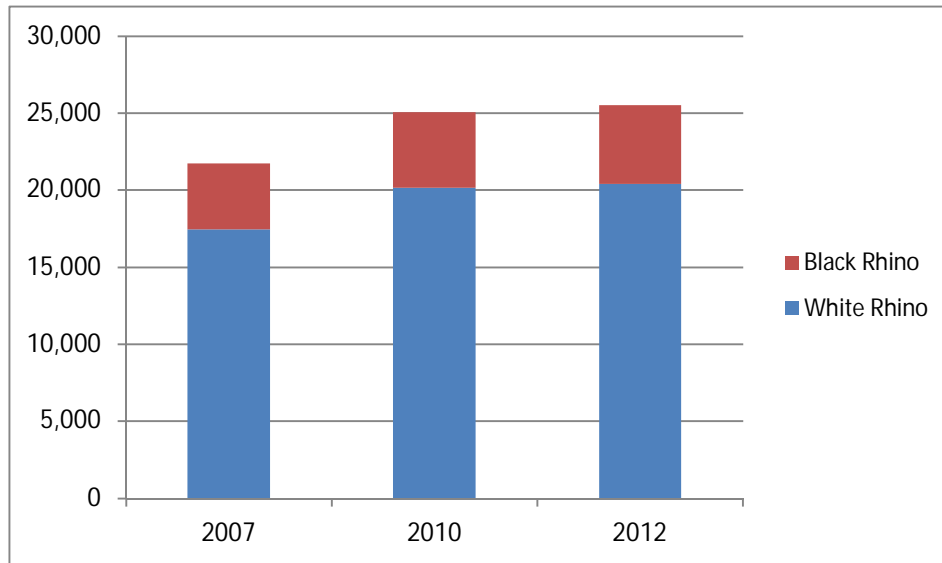
### 2.1.3 Total for White and Black Rhino

The total population of white rhino and black rhino in Africa has increased by 17.5% between 2007 and 2012 from 21,705 in 2007 to 25,510 in 2012. Over this period, the rate of increase was 4.9% per annum between 2007 and 2010, when African rhino numbers rose to 25,045, and 0.9% per annum between 2010 and 2012<sup>1</sup>. The difference in species numbers for these years is displayed in Figure 1. As explained above, the apparent recent slowing of growth in part reflects the impact of the increase in poaching.





**Figure 1 Rhino species numbers for Africa between 2007 and 2012 disaggregated by subspecies (Data from IUCN SSC AfRSG)**



## 2.2 Individual Range-States

Species numbers data for the four primary range-states of Kenya, Namibia, South Africa and Zimbabwe are presented, in Table 1, for the years 2007, 2010 and 2012. Together these countries are known as the “Big 4” rhino range states. Table 1 shows that they routinely conserve in the region of 99% and 96% of Africa’s white and black rhino, respectively (around 98% of all African rhino). In 2012 three other countries, Botswana, Tanzania and Swaziland, conserved more than one hundred rhinos, with only three other range states, Malawi, Uganda and Zambia, conserving over ten rhinos. The majority (but not all) of the continent’s AfRSG-rated continentally **Key** and **Important** populations are also found in the “Big 4” rhino range states. Table 1 also shows that South Africa is the major rhino range state conserving close to 84% of Africa’s rhinos in 2012 and almost three out of every four of the world’s rhinos in the wild.


### 2.2.1 White Rhino

The population of white rhino increased in three of the “Big 4” rhino range states between 2007 and 2012 increasing by an estimated 30.0% in Kenya, 41.6% in Namibia (in part due to importation of animals from South Africa) and 16.3% in South Africa. However, the use of a conservative 2012 estimate for the largest population in South Africa might underestimate the actual rate of increase. By way of contrast, numbers decreased by 9.3% in Zimbabwe between 2007 and 2012. This balances out to a 16.7% total increase in white rhino numbers in the four range-states over the five year period up to 2012<sup>1</sup>.

### 2.2.2 Black Rhino

Similarly for white rhino, the populations of black rhino also increased between 2007 and 2012 in South Africa, Namibia and Kenya, only declining in Zimbabwe over this period. Over the five year period black rhino numbers decreased by an estimated 22.3% in Zimbabwe and increased by an estimated 9.4% in Kenya, 22.0% in Namibia and 39.0% in South Africa. However the rate of increase in South Africa over this period is likely to be slightly overestimated given the use of a low conservative 2007 black rhino estimate for South





Africa's largest population. Using a less conservative figure for this population gives a revised growth rate of 35.3% over the five years in South Africa.

### 2.2.3 Total for White and Black Rhino

The total population of white rhino and black rhino continentally increased by 17.5% between 2007 and 2012 averaging 4.9% per annum from 2007-2010 and 0.9% per annum from 2010-2012. It is likely that the escalating poaching has negatively impacted on population growth rates. The AfRSG has estimated that if the escalation in poaching continues, the tipping point where deaths start to exceed births could start to be reached as early as 2014-2016, given a projected annual growth in poaching of +37.2% per year from 2014 onwards and underlying population growth rates from 5-9%<sup>2</sup>. On this basis, numbers would start to decline below end 2012 numbers between 2014 and 2018<sup>2</sup>. Continental rhino numbers would drop below 10,000 between 2019 and 2020.

However, it is probably unrealistic to project poaching levels increasing at such high rates for a protracted period into the future. If one were to model a linear increase of 400 additional rhino poached each year, then numbers are projected to start to decline from 2007-2020 and dip below 2012 levels between 2018 and 2024<sup>2</sup>. Under this scenario numbers would dip below 10,000 somewhere between 2024 and 2028<sup>2</sup>.

### 2.2.4 The role of the private sector in rhino conservation

AfRSG data<sup>3</sup> indicates that in 2012, almost three quarters (72.4%) of Africa's white rhino were conserved on state owned Game Reserves and National Parks leaving 27.6% of the white rhino on private and community land. The vast majority of these (an estimated 5,564 or 27.2%) were privately owned.

In contrast to white rhino, AfRSG data<sup>3</sup> indicates that in 2012 at a continental level, 23.4% of Africa's black rhino were conserved on private and community land under some form of custodianship arrangement with the State, yet only 7.1% of Africa's black rhino were privately owned in 2012. In 2012 two thirds of the continent's black rhino (66.7%) were managed in State owned Game Reserves and National Parks.

In 2010, state-owned land for white rhino in South Africa was estimated at to 26, 554km<sup>2</sup>, compared to a near equivalent 22,461km<sup>2</sup>+ of private land. The significance of the private sector in rhino conservation in South Africa is outlined in Box 1.

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<sup>2</sup> Richard Emslie personal communication with estimated growth in poaching calculated using Valuesoft's H Growth function (John Price 2013 – Valuesoft Investment System Version 3.2 Functions from The Conscious Investor – Software Manual )

<sup>3</sup> Emslie R H (2013b)

## Box 1 The significance and importance of the private sector in South Africa rhino conservation

In 2012, based on information supplied by the AfRSG, the private sector in South Africa owned an estimated 4,600 (24.3%) and 362 (17.5%) of the country's white and black rhino respectively. A further 124 black rhino in 2012 were managed under a custodianship arrangement with a further 33 rhinos on community land. Thus by 2012 there were over 5,000 rhinos on private land in South Africa – more rhinos than there were in the whole of the rest of the continent.

Private rhino ownership has contributed to the overall success of increasing rhino numbers in South Africa. More land is now set aside for wildlife ranching of some sort than for national or provincial protected areas.

'...since the 1960s, there has been a marked shift to wildlife-based land-use amongst private landowners, and today game ranches in South Africa cover an area nearly three times the collective size of all national and provincial protected areas on State land' (Milliken and Shaw, 2012: 8).

Private ownership is supporting the increased growth in rhino numbers. The 2012 TRAFFIC report – *'The South Africa – Vietnam Rhino Horn Trade Nexus: A deadly combination of institutional lapses, corrupt wildlife industry professionals and Asian crime syndicates'* by Milliken and Shaw – raises the significance and importance of the private sector for successful and sustainable rhino conservation in South Africa. However, increasing security costs and risks to investments and people (as a result of the increased poaching and increased involvement of well-armed criminal syndicate poaching gangs), and declining economic incentives are leading to increasing numbers of white rhino owners selling and getting rid of their rhino. If this trend continues, current rates of population growth and increasing range availability could be threatened.



# SECTION 3

## The trend in Rhino poaching rate

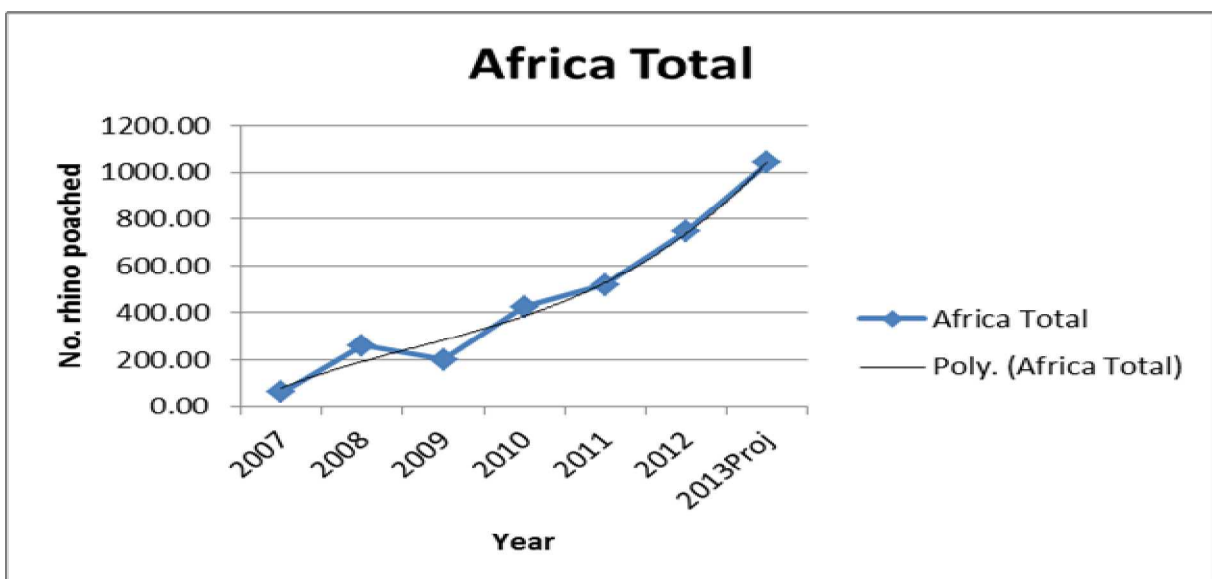
Data on the trend in poaching is available for Africa and for individual range-states. Data could not be disaggregated for the white rhino and black rhino in the time available. However, in the main range state South Africa, it appears a disproportionately higher proportion of the commoner white rhino are being poached compared to black rhino. This is due to white rhino being easier to find in the more open habitats they favour, their more gregarious nature (where poachers can kill a few rhino in one place) and the fact that the returns for poachers per rhino (in Kilogramme of horn harvest) on average is greater on white rhino<sup>2</sup>.

### 3.1 Africa

#### 3.1.1 White and Black Rhino

At a continental level there has been a 184% increase in poaching of the white and black rhino between 2008 and 2012. The minimum number of recorded poached rhinos in Africa in 2008 was 262. This had increased to 745 in 2012<sup>1</sup>. Figure 2 displays changes in minimum numbers of recorded poached rhinos in Africa from 2007 – 2012 and projected minimums for 2013 based on recorded poaching for the “Big4” and all the other range states with the exception of Mozambique where the number of rhinos that crossed into the country from Kruger National Park and were subsequently poached is not known at the time of writing. Table 2 provides the figures for Africa and the individual range states Kenya, Namibia, South Africa and Zimbabwe over the same period. While poaching remains low in Namibia and has been declining in Zimbabwe, poaching continues to escalate in South Africa and Kenya.

**Figure 2 Changes in minimum numbers of recorded poached rhinos in Africa, 2007 – 2012 and projected minimums for 2013 with fitted third order polynomial trend lines (Data for 2007 – 12 from AfRSG and TRAFFIC and CITES Rhino Working Group and 2013 data and projections from AfRSG)<sup>1</sup>**





	Country	2007	2008	2009	2010	2011	2012	2013*	2013 Projected	Country Totals 2007 – 2013 Proj
Primary range states	Kenya	1	6	21	22	25	29	47	60	164
	Namibia	0	0	2	2	0	1	4	5	10
	South Africa	13	83	122	333	448	668	746	959	2626
	Zimbabwe	38	164	39	52	35	29	9	13	370
	Total	52	253	184	409	508	727	806	1037	3170
	Poached/day	0.14	0.69	0.50	1.12	1.39	1.99		2.84	n/a
Africa	Total	62	262	201	426	520	745	808+	1040+	3256
	Poached/day	0.17	0.72	0.55	1.17	1.42	2.04		2.85+	8.9+

**Table 2 Minimum numbers of recorded poached rhinos in Africa, 2007 – 2013 (Data for 2007-2012 from AfRSG, TRAFFIC and CITES Rhino Working Group)<sup>1</sup> Data and projections for 2013 from AfRSG. 2013 data covers the “Big4”, Botswana, Malawi, Swaziland, Tanzania, Zambia and Uganda and range from up to 17 Sept to 21 Oct. 2013 annual totals have been projected assuming average poaching/day in 2013 continues at the same rate.**

## 3.2 Individual Range States

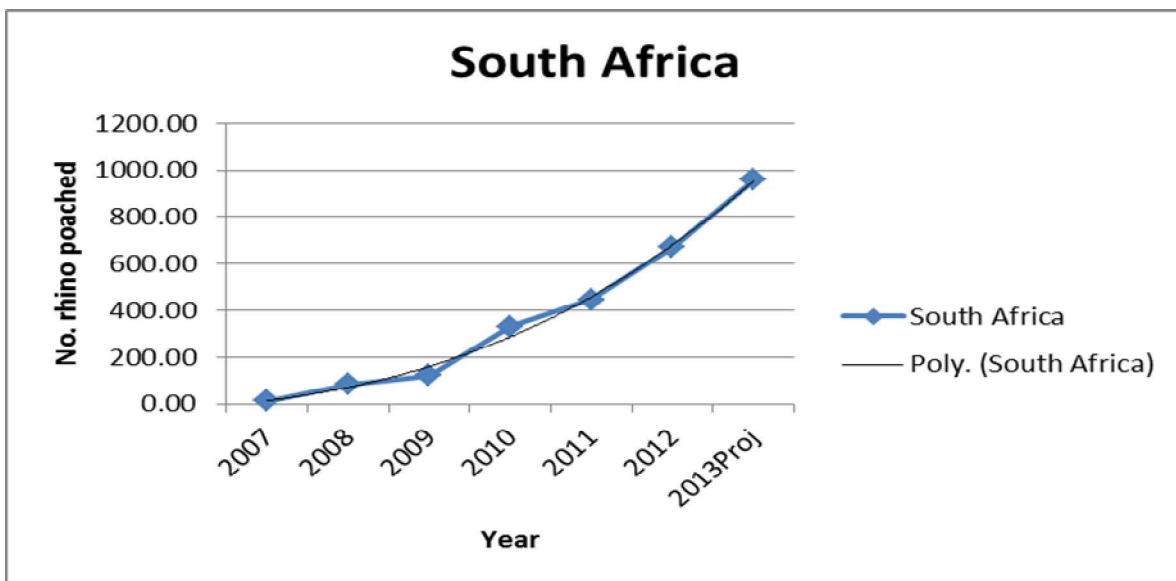
### 3.2.1 Trends on poaching rates for individual range states<sup>1</sup>

In absolute numbers, South Africa has had the highest increase in poaching rate in recent years but in relative terms poaching over the last few years has been similar in South Africa and Kenya (3.2% and 2.8% of their 2012 population respectively). In 2013 to date, poaching has continued to escalate in these two countries but in relative terms poaching has increased more in Kenya, projected levels representing 4.6% and 5.9% of 2012 numbers for South Africa and Kenya respectively). Table 2 shows that poaching started to escalate dramatically in South Africa in 2008 and between 2008 and 2013 poaching in the country has increased over 10 fold, from 83 Rhinos in 2008 to a projected 959 in 2013<sup>4</sup>. The true total may be higher as historically poaching has been higher in the last quarter of the year and it is likely that some poaching will go undetected in the vast Kruger NP. This trend is displayed in Figure 3. By way of contrast, poaching peaked in Zimbabwe in 2008 and has continued to decline since. Poaching in Namibia has remained low. In relative terms poaching has been higher in recent years in Malawi and especially Mozambique where any rhinos that move across the border from South Africa are likely to have a very limited lifespan.

<sup>4</sup> All percentage figures rounded to the nearest 10%

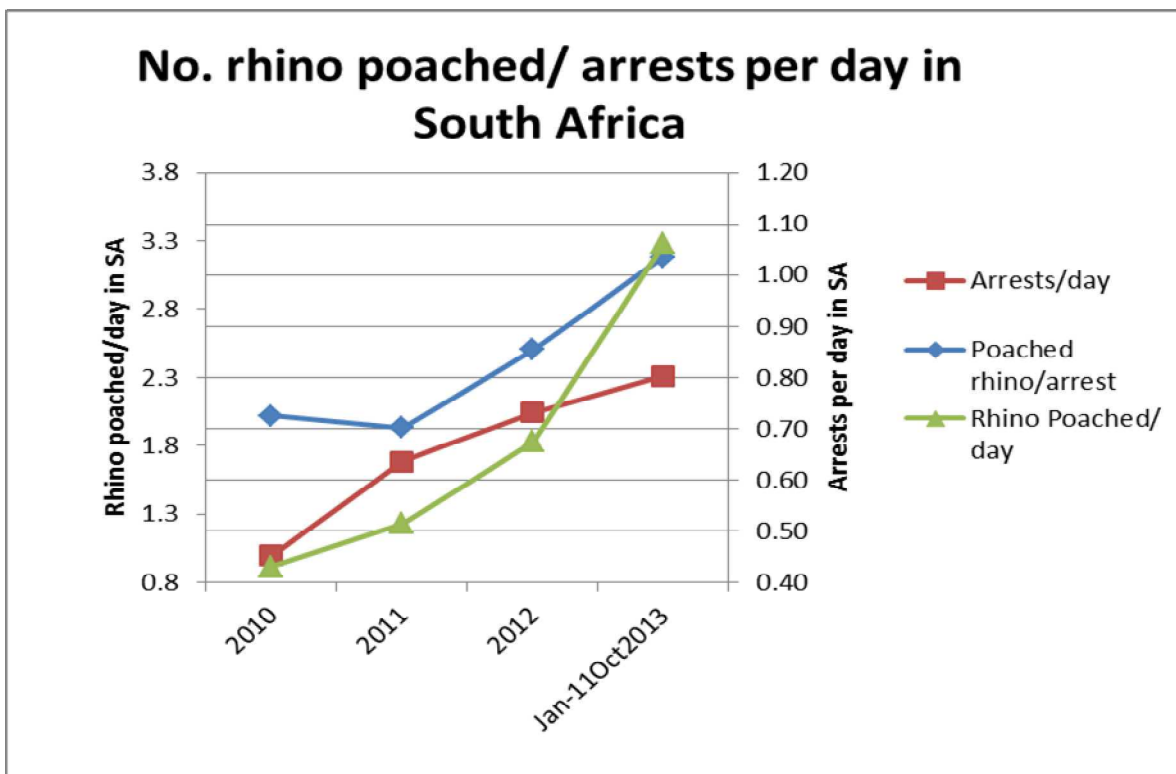


**Figure 3 Changes in minimum numbers of recorded poached rhinos in South Africa, 2007 – 2012 and projected country totals for 2013 with fitted third order polynomial trend lines (Data for 2007-12 from AfRSG, TRAFFIC and CITES Rhino Working Group and 2013 data and projections from AfRSG)<sup>1</sup>**



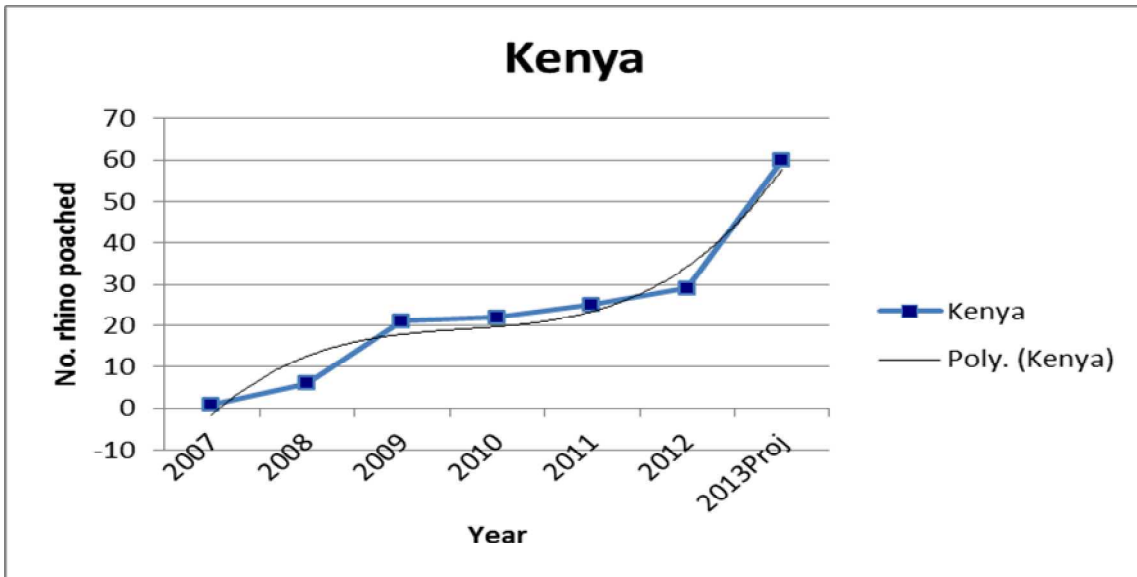
Poaching continues to escalate in South Africa despite the number of arrests continuing to increase year on year, as shown in figure 4 (data from unpublished AfRSG analysis of data from Department for Environmental Affairs SA and National Wildlife Crime Reaction Unit).

**Figure 4 Number of Arrests in South Africa compared to rates of rhino poaching in the country (data from unpublished AfRSG analysis of data from Department for Environmental Affairs SA and National Wildlife Crime Reaction Unit)**



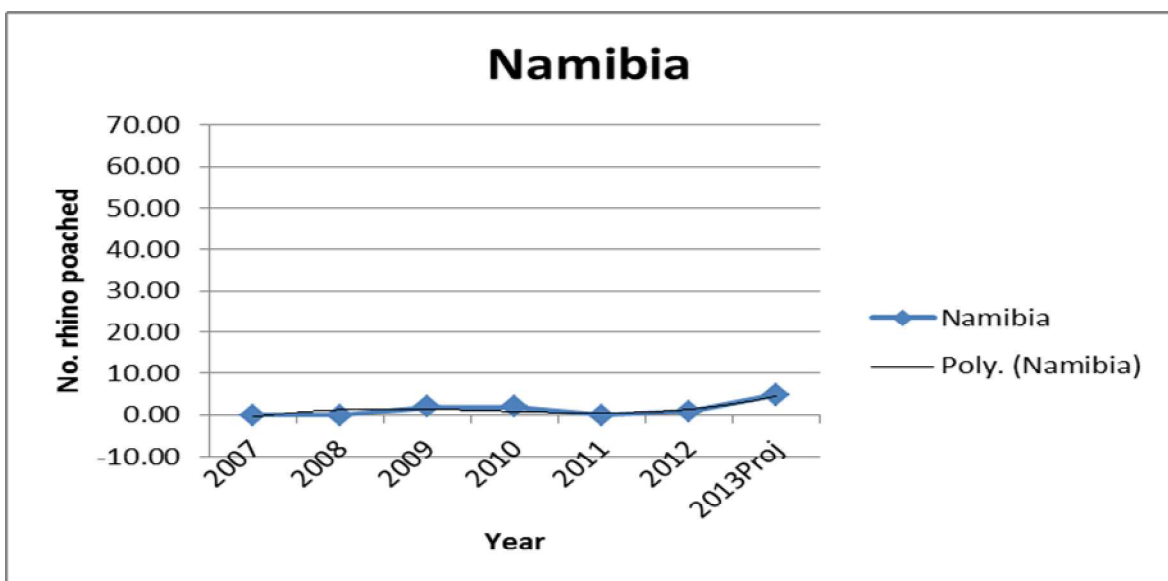
Poaching also started to pick up in Kenya in 2008 and since then it has increased by 380% from six Rhinos in 2008 to 29 in 2012, as displayed in Figure 5. Figure 5 also shows that poaching has spiked once again in 2013.

**Figure 5 Changes in minimum numbers of recorded poached rhinos in Kenya, 2007 – 2012 and projected country totals for 2013 with fitted third order polynomial trend lines (Data for 2007-12 from AfRSG, TRAFFIC and CITES Rhino Working Group and 2013 data and projections from AfRSG)<sup>1</sup>**



The poaching pattern in Namibia from 2007-2012 has been very different with numbers poached fluctuating at very low levels from zero to two rhino poached per year.

**Figure 6 Changes in minimum numbers of recorded poached rhinos in Namibia, 2007 – 2012 and projected country totals for 2013 with fitted third order polynomial trend lines (Data for 2007-12 from AfRSG, TRAFFIC and CITES Rhino Working Group and 2013 data and projections from AfRSG)<sup>1</sup>**

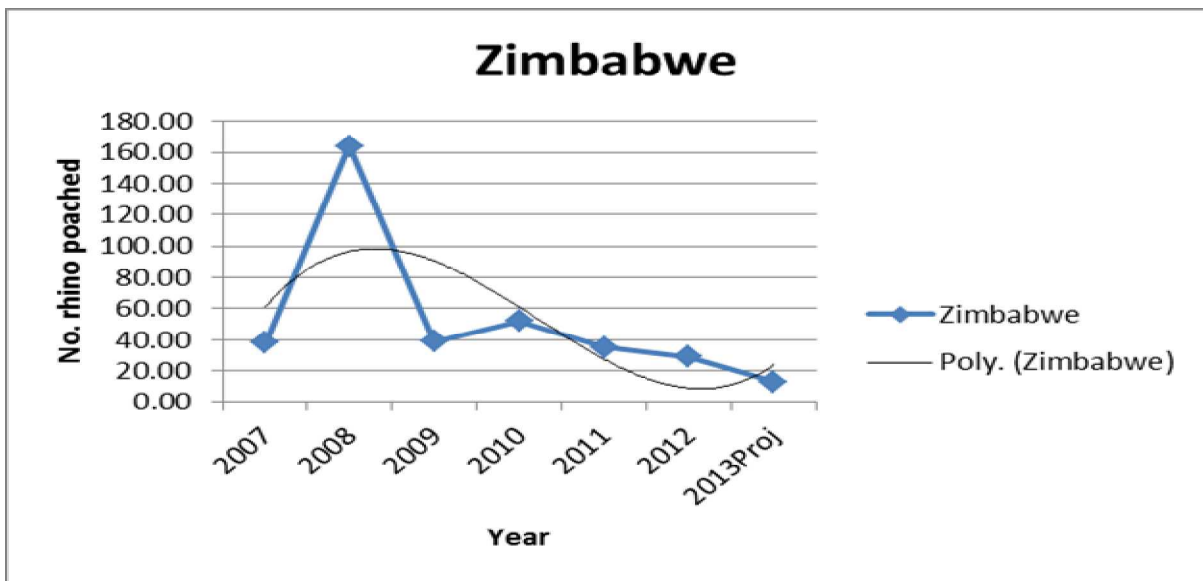






The poaching pattern in Zimbabwe also differs from South Africa and Kenya in that poaching in Zimbabwe peaked in 2008 and has declined since. Poaching has been concentrated in National Parks and conservancy areas in the Midlands. Heavy poaching in Bubiana conservancy also resulted in the last remaining animals there being caught and relocated to another conservancy where they would be safer. In Zimbabwe, poaching has decreased by 82% from 164 in 2008 to 29 in 2012 and is projected to only reach 13 in 2013. This trend is presented in Figure 6. The lowveld conservancy populations in Zimbabwe have generally suffered lower poaching levels with the result that their contribution to the national total has increased significantly.

**Figure 7 Changes in minimum numbers of recorded poached rhinos in Zimbabwe, 2007 – 2012 and projected country totals for 2013 with fitted third order polynomial trend lines (Data for 2007-12 from AfRSG, TRAFFIC and CITES Rhino Working Group and 2013 data and projections from AfRSG)<sup>1</sup>**







# SECTION 4

## Concluding Remark

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This short report analysed AfRSG rhino number data and continental poaching statistics jointly compiled by the AfRSG and TRAFFIC (with some of this information also coming from the CITES rhino working group). The data were obtained from three reports and a revised updated 2012 numbers table (with some minor changes) provided by the AfRSG (from their confidential Meeting Proceedings):

- (i) *Milliken R, Emslie, R.H and Talukdar B (2009) African and Asian Rhinoceroses – Status, Conservation and Trade, A report from the IUCN Species Survival Commission (IUCN/SSC) African and Asian Rhino Specialist Groups and TRAFFIC to the CITES Secretariat, pursuant to Resolution Conf. 9.14 (Rev. CoP14) and Decision 14.89, CoP15 Doc. 45.1.*
- (ii) *Emslie, R., Milliken, T., Talukdar, B., (2012) African and Asian Rhinoceroses – Status, Conservation and Trade, A report from the IUCN Species Survival Commission (IUCN/SSC) African and Asian Rhino Specialist Groups and TRAFFIC to the CITES Secretariat, pursuant to Resolution Conf. 9.14 (Rev. CoP15), CoP16 Doc. 54.2-rev 1.*

The Emslie et al., (2012) report provides estimates of African rhino numbers as of the end of December 2010 and continental poaching statistics by country up to the end of September 2012. The report is useful in that it includes data for 2010 but it does not include a full set of data for 2012. However, the report indicated that the AfRSG should be able to provide Parties at CITES CoP16 with updated rhino numbers as of December 2012 which it did with an inf doc (51). Given the short time between the end of the AfRSG meeting and the start of CITES Conference of the Parties (CoP), the numbers provided were provisional and following further checking and review these numbers were revised slightly with final estimates for the end of 2012 being included in a table in the 2013 AfRSG meeting proceedings document, which was provided by the AfRSG.

- (i) *Emslie, R.H. (2013a) African Rhinoceroses – Latest trends in rhino numbers and poaching. An update to Doc 54-2-Annexe 2 from the IUCN Species Survival Commission’s (IUCN/SSC), African Rhino Specialist Group to the CITES Secretariat pursuant to Resolution Conf. 9.14, (Rev. CoP15) CITES CoP16 Inf Doc 51*
- (ii) *Emslie, R.H. (2013b) Table 1 – Numbers of white and black rhinos in Africa as of 31 Dec 2012 by country and subspecies extracted from Section 4: Wild African Rhino Population Sizes, Numbers and Trends, including AfRSG rated populations and by management model in Confidential Full and Abridged Proceedings of the Eleventh Meeting of the IUCN African Rhino Specialist Group held at Naro Moru River Lodge, Kenya from 17-22 February 2013 (Cathy Dean – compiler 2013)*

The Emslie et al., (2013a) document provided Parties with provisional updated numbers and poaching statistics in response to the abovementioned Emslie et al., (2012) report. The report is useful in that it includes a full dataset for 2012 that were compiled at the recent 11<sup>th</sup> meeting of IUCN SSC AfRSG held in Kenya from the 17-22 February 2013. Slightly updated final continental statistics were also provided by the AfRSG.



The AfRSG was also able to provide some updated 2013 poaching statistics for some of the major range states since COP 16.

Section 4 from the AfRSG 2013 Meeting Proceedings (Emslie 2013b) also provided the data on breakdown of rhino by management model quoted in the text.

The breakdown of all data calculations is provided for DFID in the attached supporting analysis document.



## Acknowledgements

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