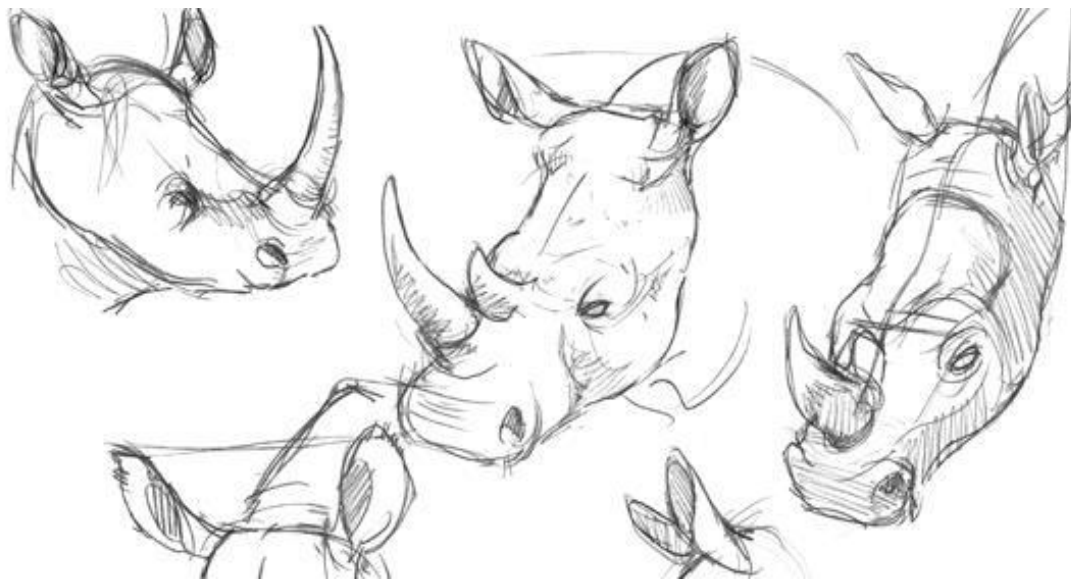


STATUS OF WHITE RHINO

ON PRIVATE AND COMMUNAL LAND IN SOUTH AFRICA

2012-2014



February 2016

Table of contents

Authorship	2
Acronyms	3
Executive summary	4
Introduction	6
The brief	7
Methods	8
The Survey	8
Contact database	8
The questionnaire	8
Circulation of the questionnaire	8
The data	9
Results	10
Properties	10
White rhino	11
Numbers	11
Demographics	13
Life history traits	14
Horn	14
Administration	14
Number	14
Mass	14
Poaching	15
White rhino killed	15
Horn theft	16
Responses to the poaching pandemic	17
Complete disinvestment from rhino	17
Sale of land	18
Partial disinvestment from rhino	18
Moving white rhino to new destinations	19
Investment in white rhino	20
Trade perspectives	20
Management costs	22
Security	22
Monitoring	23
Hunting	24
Discussion	24
Property / response stratification	24
Horn	24
Hunting	25
Trends	25
Acknowledgements	30
References	31
Appendix I	33

Status of white rhino on private and communal land in South Africa: 2012 - 2014

Report commissioned by the Department of Environmental Affairs, Pretoria.

Authorship

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Acronyms

AfRSG	African Rhino Specialist Group of the IUCN Species Survival Commission
DEA	Department of Environmental Affairs
EC	Eastern Cape Province
EWT	Endangered Wildlife Trust
FS	Free State Province
GP	Gauteng Province
IUCN	International Union for the Conservation of Nature
KZN	KwaZulu-Natal Province
LIM	Limpopo Province
MP	Mpumalanga Province
NC	Northern Cape Province
NW	North West Province
PROA	Private Rhino Owners Association
RMG	Rhino Management Group
SADC	Southern African Development Community
WC	Western Cape Province

Executive summary

This survey of white rhino on private and communal land in South Africa between 2012 and 2014 took place over a period of 10 weeks in mid-2015. White rhino owners and managers were contacted by e-mail, using the Private Rhino Owners Association (PROA) contact list, with a letter of introduction from the chair of the Rhino Management Group (RMG). All were requested to complete the questionnaire which was attached to the e-mail. Additional addresses were obtained from the SADC-RMG provincial representatives and they were similarly contacted. E-mail and telephonic follow-ups were conducted to non-responsive properties. The responses were used to correct and update the contacts list, capture relevant rhino, security and other information for properties with white rhino and to garner information on the views of owners and managers regarding trade in rhino horn. An initial report was submitted on this survey.

Six months after the closure of the 2015 survey, new information came to light in the Northern Cape which has a material impact on the estimated population numbers. This report is an edited/updated version of the initial report which was drafted i) to accommodate editorial requests made by DEA; and ii) to accommodate the new Northern Cape population white rhino and property numbers and area – this is the only new information in this report. This does not include a complete recalculation of all figures. Rather the new information on the number of properties, estimates of the total population and the total area are inserted, where appropriate and feasible, into the original text.

From the 339 properties contacted in this survey, 171 responses were received representing 4458 white rhino and 1,444,682 hectares of white rhino habitat with an average property size of 9,760 ha. With the additional 224,955 ha of private land with white rhino identified in the Northern Cape the total area is now 1,669,637 ha. Based on the additional previously unaccounted for white rhino in the Northern Cape, at the end of 2014, there were a minimum of 4,945 white rhino, probably 5,221 and possibly as many as 5,505 white rhino on private and communal land in South Africa. Half of the respondent populations had less than ten individuals, while 21 (13.4%) of the populations had 50 rhino or more¹. For the first time a private white rhino herd exceeded 1000 animals with the largest reported population being 1,076 at the end of 2014. In terms of the IUCN definition this is a Key 1 population (Emslie et al 1999). Nationally there is a strong female bias with the reported sex ratio being 1 male to 1.512 females on private and communal land.

Half of the respondents indicated that they had a registered horn stockpile. These respondents represent a national privately-owned horn stockpile of 6,246 kg. A total of 369 kg of rhino horn is reported as having been stolen during the survey period. 371 white rhino were reported as having died due to poaching from private and communal

¹ A population of 50 white rhino or more is considered “key” by the IUCN AfRSG.

land over the survey period with most of these (47%) having been poached in Limpopo followed by Mpumalanga (25%). Of the respondents 67.5% indicated that they supported legal hunting of white rhino but only 20% of respondents actually participate in hunting. Twenty five percent of respondents did not support hunting. Of the respondents 84.5% indicated support for legal trade in horn and 80.0% indicated that they would participate in this activity. Only 4.3% of respondents indicated that they did not support legal trade in rhino horn. There was less support for intensive husbandry of white rhino as a land use with 73.5% of respondents indicating support for it but only 44.4% indicating that they would participate in the activity. 6.8% of respondents were against intensification of white rhino while 32.5% of respondents said that they would not participate in the intensification of white rhino as a land use.

In response to the poaching pandemic, at least 39 and possibly 63 properties disinvested completely of white rhino during the survey period resulting in a loss of a minimum of 193,000 ha (11.8%) of white rhino habitat and affecting a minimum of 204, and potentially 554, white rhino under private and communal ownership. These animals were not however lost to the national herd, rather they were redistributed to other properties. No key population of white rhino experienced disinvestment. A disturbing, and apparently increasing, number of incidents assessed to be threatening to human life (280 in total over the three years) were reported for the survey period. Security costs were reported to have doubled since 2010 with a national private white rhino security cost of approximately R40 million annually. In addition to this the cost borne by private land owners for monitoring their white rhino populations is close to double this figure and estimated to be approximately R75 million annually.

The revised database has 313 properties which are thought to have white rhino on them but due to the non-respondent properties as well as potential new properties which are not a member of PROA and thus “unknown” there remains uncertainty as to the exact number of properties in South Africa that have white rhino on them.

Introduction

The southern white rhino (*Ceratotherium simum simum*²), which is indigenous to southern Africa, was historically widespread and abundant. By the turn of the 20th century however, unregulated hunting had reduced the global population to less than 100 individuals³, all of which were found in South Africa. This was followed by a century of conservation action which resulted in the global white rhino population increasing to approximately 20,300 individuals in 2012, of which 18,900 (93%) were in South Africa (Knight *et al.* 2015). This recovery has been hailed as one of Africa's greatest conservation success stories. While many of these rhino were found in state run protected areas⁴, starting in mid-twentieth century, the private sector has played a significant role in white rhino conservation. This is evidenced by the fact that an estimated 4,520 (24% of the national herd) white rhino were found on private land in South Africa in 2012 (Knight *et al.* 2015). With the social and political transformation that is taking place in South Africa, the communal land sector is beginning to play an increasing role in the conservation of white rhino.

Despite this conservation success story, the global white rhino population, including in South Africa, has come under considerable pressure since 2008 when the pressure of poaching for rhino horn began to escalate (Knight *et al.* 2015). This upsurge in poaching has resulted in significantly increased costs for rhino protection as well as increased security risks to rhino owners and conservation staff. To date opportunities to generate revenue from rhino conservation (e.g. live sale prices and ecotourism revenue) have not increased in a similar manner. A continuation of these trends could result in many private owners disinvesting from rhino conservation resulting in increased vulnerability of rhino populations as well as a reduction in funds and habitat so essential for their survival.

The first survey of white rhino on private land was undertaken in 1987 (Buijs 1988). This was followed by eight more surveys in 1994 (Emslie 1994), 1996 (Buijs & Papenfus 1996), 1997 (Buijs 1998), 1999 (Buijs 2000), 2001 (Hall-Martin & Castley 2001), 2004 (Castley & Hall-Martin 2004), 2008 (Hall-Martin *et al.* 2009) and 2011 (Shaw *et al.* In prep.) collating and assessing information on the number, size, performance and structure of individual populations together with providing insights into poaching impacts, private rhino horn stockpiles, population management and views on trade related matters.

The trend established through this series indicates a steady increase in the size of the privately owned white rhino herd between the mid-1980s and 2012 in South Africa as

² For simplicity purposes the species will be referred to as "white rhino" in this text.

³ Some texts suggest that this figure could be as low as "20 – 50" individual white rhino.

⁴ Kruger National Park and Hluhluwe-iMfolozi Park respectively accounted for two thirds or an estimated 53% and 13% of South Africa's white rhinos in 2012.

follows: 1987 (813); 1994 (1199); 1996 (1445); 1997 (1742); 1999 (1922); 2001(2534); 2004 (3247); 2008 (4033) & 2011 (4935).

This tenth survey serves as a continuation of the series and covers the period 2012 to 2014. In the interests of tracking changes as they occur, this survey was extended to cover white rhino found on communally owned land as well as on private land in South Africa.

Information of the nature as collated and tracked in these surveys is critical for the country as it develops policies and strategies to counter the poaching threat, as it monitors the impacts of any interventions that it may make and as it motivates and reports to regional and international bodies regarding the management and trade of white rhino and white rhino derivatives.

The survey was commissioned by the Department of Environmental Affairs (DEA), co-ordinated by the Chair of the Rhino Management Group (RMG), administered through the Endangered Wildlife Trust (EWT) and partnered by the Private Rhino Owners Association (PROA).

The brief

The brief for this survey of white rhino in South Africa was to:

Conduct a survey of white rhino on private and communal land in South Africa covering the period January 2012 to December 2014.

The key objectives of the survey were to:

- a) Provide updated information on the status of white rhino populations in South Africa – i.e. to extend previous surveys and knowledge of trends;
- b) Ascertain the views and actions of rhino owners and managers relating to their willingness to continue to own and manage white rhino, levels of poaching that they have experienced, trade in horn, intensification of management, disinvestment and other related matters; and
- c) Extend the survey to include properties with communally owned white rhino.

The survey was timed to enable a preliminary data analysis and report to be submitted on 31 August 2015 and a final report by end of October 2015. Included in the detail of the brief was:

- a) Initiate survey in June 2015;
- b) Update private white rhino owners database using available sources;
- c) Contribute to the compilation and editing of the questionnaire;
- d) Ensure that the questionnaire is circulated to all on the database;
- e) Receive all completed and returned questionnaires;
- f) Establish a database for and capture all returned questionnaires;

- g) Conduct email and telephonic follow-ups with targeted properties;
- h) Close down survey, analyse and report on the results; and
- i) An additional “focussed discussion” section was requested for the report.

Methods

The Survey

As participation by private and communal rhino owners and managers in this survey is voluntary, and as there is a significant degree of reluctance by some owners and managers to release their rhino information, a strategic partnership was developed between the RMG and PROA at the start of this survey in an attempt to increase confidence in, as well as the reach of and response rate to, the survey.

Contact database

The primary database used to contact white rhino owners/managers was the PROA membership database. It was recognised at the beginning that this database was not entirely correct⁵ or completely current and that there were rhino owners who are not members of PROA and thus were not in the database. This database was checked prior to the initial circulation and to the extent possible it was updated. Additional contact details were obtained through the provincial representatives⁶ of the RMG as well as through using previous survey information. Duplicates, errors and properties where responses indicated that there were no longer white rhino present were removed to establish the final database at the end of the survey.

The questionnaire

The questionnaire, as used in the previous survey, was reviewed and updated and, together with a letter of introduction, was circulated to the parties concerned⁷ and approved for distribution to the rhino owners/managers/properties (see Appendix I). The questionnaire directed respondents to email the completed survey to a single email address for capture and analysis purposes.

Circulation of the questionnaire

On 15 June 2015 the questionnaire, together with a covering letter, was emailed to each of the 296 properties initially listed. These were sent from the email address of the Chair of PROA to promote a sense of confidence in the source of the requests. The questionnaire was also sent to all 70 new properties for which details were obtained during the survey. Each property which had not submitted a response received three

⁵ There were duplicate entries for properties due to name changes or amalgamations, outdated information resulting from changes in managers *etc.*, as well as other incorrect details.

⁶ Not all provincial representatives were comfortable providing this information in which case they were requested to circulate the questionnaire to the white rhino owners and to encourage them to respond.

⁷ Chair of the RMG and the Board of PROA.

follow-up circulations of the questionnaire in July and August. In addition to this many properties which had not responded by the end of July were then contacted telephonically (by a PROA representative or the author) and encouraged to complete the questionnaire. This process was not perfect as many calls were not answered despite repeated attempts. Effort was made to obtain accurate (if incomplete) data from the owners or managers, and follow up phone calls were made to clarify issues in a number of cases. The closing date for submissions was set as the 20th August 2015.

One late submission of a significant number of white rhino on private land in the Northern Cape⁸, as well as an indication of the property areas, was submitted six months after the survey was closed. Based on a special request from DEA these numbers have been incorporated into the text of this document where appropriate, although not all the calculations and have incorporated them.

The data

As completion of the questionnaire was voluntary, there was no mechanism to insist on complete details being provided and any information returned was accepted and entered into the database. On receipt of the returned questionnaire the data were captured in a two stage process in two separate databases. Firstly, contact details of the owner and manager were confirmed and updated as were property names and sizes. Following this each property was allocated a unique code. This unique code was then used to identify the property in a separate database where the rest of the information was captured, thus separating population details and responses from the property and owner details and ensuring complete confidentiality of the information. When a question was not responded to, a blank was entered into the database – this influences the analyses and the results presented. A consequence is that “n” varies for each analysis. Data entry errors were reduced by running verification algorithms.

Simple spreadsheet analyses were conducted on the resulting data set.

For rhino numbers the Definite, Probable and Possible figures are used and they provide a measure of confidence in the estimate. For all other results only information received through respondents to the survey are used unless otherwise indicated (e.g. for Northern Cape).

Data received through the return of questionnaires are considered as “definite” rhino that exist in the landscape. Not all information on the presence of rhino, however, was received by means of a returned questionnaire. In two provinces trusted independent sources, with independent data holdings, provided a consolidated lump sum total of rhino⁹ for properties which did not respond to the survey and which wished to remain anonymous. These numbers were provided during the survey period and have been

⁸ These data were clumped into a single figure and the distribution between properties is not known.

⁹ Two figures were provided during the survey period and one figure was provided after the survey had closed but in 2016 and the results have been belatedly included into this version of the report.

tagged as separate in the database. In addition the Northern Cape numbers have been treated separately. In discussion with the Scientific Officer of the AfRSG, it was agreed that 80% of these “lump sum” data would be identified as rhino that are “definitely” present on private land and 20% are identified as “probably” present rhino. For these rhino the associated data of property name, property area, poaching statistics, *etc.* are not available.

Additionally, to obtain a more realistic assessment of the national white rhino herd on private and communal land, numbers of white rhino were extrapolated to non-responsive properties outside the two provinces for which there was independent information, by applying a weighted average white rhino density across the known property sizes of the 168 non-responsive properties¹⁰. 40% of these are identified as “probable” rhino and 60% are identified as “possible” rhino.

Results

Questionnaires were sent to 339 properties. Responses were received from 171 (50.4%) properties with 168 non-responses.

Properties

The 171 returned questionnaires represent 1.44 million hectares of rhino habitat (Table 1) and 4458 white rhino. The average size of these properties was 9,761 ha, ranging from 54 ha to 103,000 ha. Due to the lack of information associated with the non-responses, the total number of private and communal properties with white rhino in the country is not known but including the late Northern Cape data indicates a **minimum number of 261 properties** (171 + 48 + 42). The corrected white rhino database has 313 properties listed¹¹. Some of these properties may not currently have white rhino and there may be properties in the country which are not listed, but this is currently the best database that exists on the matter. The average area of the non-respondent properties for which there is historical data, is 1,695 ha.

Of the respondent properties, 80 were less than 5,000 ha in extent with 22.2% of the white rhino, 53 were between 5,000 ha and 24,999 ha with 49.6% of the white rhino, 14 were between 25,000 ha and 99,999 ha with 26.8% of the white rhino and one was greater than 100,000ha with 1.4% of the white rhino. The average number of white rhino on properties less than 5000 ha was 12.1, on properties between 5,000 ha and 24,999 ha was 40.7, on properties between 25,000 ha and 99,999 ha was 83.2 and for the single property greater than 100,000ha the number of white rhino was 62.

¹⁰ The weighting was determined for each province by establishing the average density of the respondents as well as by factoring in the provincial disinvestment ratio. Data for these calculations was incomplete.

¹¹ This excludes those properties which indicated that they have completely disinvested in white rhino during the survey period as well as duplicate entries that were identified.

Table 1. Breakdown of respondent properties and their areas by province.
(n = 148 for Area).

Province	Number of forms distributed	Number of responses	Provincial response (%)	Area (1000 ha)	Mean property area (ha)
Eastern Cape	47	18	38.3	144.46	8026
Free State	18	13	72.2	20.54	1580
Gauteng	9	3	33.3	29.50	9833
KwaZulu-Natal	43	23	53.5	144.55	6285
Limpopo	130	60	46.2	453.57	7560
Mpumalanga	14	9	64.3	197.82	21980
Northern Cape ¹²	18	12	66.7	474.56	20800
North West	31	23	74.2	130.82	5688
Western Cape	15	4	26.7	68.35	17088
Unstated	14	6	42.9	5.47	912
Total	339	171	50.4	1,669.64	9761

An additional 90 properties (20 in KZN, 28 in Eastern Cape and 42 in Northern Cape) are partially accounted for in that the number of white rhino on those properties is included in the population estimates but no other information is known about them.

White rhino

Numbers

The estimated number of white rhino on private and communal land in South Africa at the end of 2014 is definitely 4,945 (minimum), probably 5,221 and possibly 5,505 (maximum). This total is comprised of 4945 “definites”, 276 “probables” and 284 “possibles”. The breakdown of “definite”, “probable” and “possible” white rhino for each province is presented in Table 2. Reported numbers of white rhino on private and communal land in 2012 & 2013 are 3554 & 3804 respectively (n=145, 146 & 156 for 2012, 2013 & 2014 respectively). An estimated 32 white rhino are on the three communal properties identified¹³. Fifteen new properties were identifiable from the responses – i.e. they had no white rhino in 2012 but later reflected their presence.

¹² Includes an additional 224955 ha which were reported six months after the survey closed.

¹³ In this report these 32 rhino are treated as a subset of the total figure and not additional to it.

Table 2. Breakdown of the reported, “definite”, “probable” & “possible” white rhino by province, and density of the reported (rhino/ha) at the end of 2014¹⁴.

Province	Reported*	Definite	Probable	Possible	Total	Density
Eastern Cape	189	389	50	0	439	0.002693
Free State	95	95	5	7	107	0.004626
Gauteng	21	21	1	2	24	0.000712
KwaZulu-Natal	437	535	24	0	559	0.003701
Limpopo	1239	1239	61	92	1392	0.002732
Mpumalanga	691	691	34	51	776	0.003493
Northern Cape	481	670 ¹⁵	37	35	742	0.001412
North West	1279	1279	63	95	1437	0.009777
Western Cape	22	22	1	2	25	0.000322
Unstated	4	4	0	0	4	0.000731
Totals	4458	4945	276	284	5505	0.003297

* “Reported” and “Definite” numbers differ for the Eastern Cape, KZN and Northern Cape as there was additional data available for these provinces.

Reported white rhino populations at the end of 2014 range in size from >1000¹⁶ to 1. Half (50.3%) of these populations had less than ten individuals, while 13.4% of the populations had 50 rhino or more. The largest reported population had 1076 white rhino at the end of 2014. The breakdown in reported white rhino population size class for each of the three years of the survey is presented in Table 3. The shifting of populations between size classes is evident for the largest population between 2013 and 2014.

Table 3. Breakdown of reported white rhino population size class for the three years of the survey.

Year	<10	10 - 19	20 - 49	50 - 99	100 - 199	200 - 499	500 - 999	1000 +
2012	76	36	22	5	4	2	1	0
2013	75	37	19	9	3	2	1	0
2014	79	32	25	12	7	1	0	1

¹⁴ The bulk estimates are 250 for EC and 122 for KZN.

¹⁵ 670 calculated as definites; 707 calculated as probables and 742 as possibles from late data.

¹⁶ Strictly, the single property with more than 1000 white rhino consists of a number of smaller populations in fenced camps which are managed as a single meta-population.

Demographics

The national white rhino herd is skewed towards females with the reported ratio of males to females being 1.512 (3238 males to 4897 females; $n = \sim 85$ properties¹⁷ for all three years combined) over the reporting period (Figure 1).

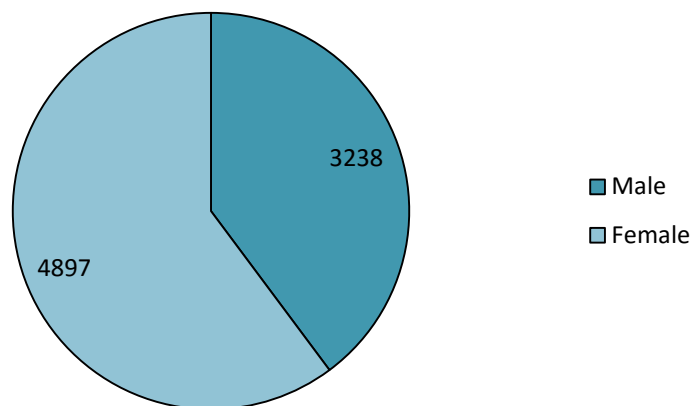


Figure 1. Average sex ratio (males to females) for the national herd reported for the period 2012 – 2014.

The annual breakdown of reported sex ratios retains the female bias for each year although this may be steadily declining over the survey period (Table 4). The age class structure for each of the three years of reporting is presented in Table 5.

Table 4. Breakdown of white rhino sex ratio for the reported herd: 2012 – 2014.

Year	Male	Female	Ratio
2012	896	1414	1.578
2013	1038	1620	1.561
2014	1304	1863	1.429

Table 5. Breakdown of white rhino age class for the reported period 2012 – 2014.

Year	Calves	Sub-adults	Adults
2012	479	643	1332
2013	513	884	1439
2014	613	1058	1680

¹⁷ "n" varies slightly due to the nature of responses received from respondents to the questionnaire.

Life history traits

Nationally, 877 births (241, 269 & 367 for each year of the survey respectively) and 238 deaths (52, 66 & 120 respectively) were reported. This calculates to be a natural mortality rate of approximately 2.4% per annum. Seven unintended / accidental humanly induced mortalities were reported for the survey period.

Horn

Administration

Due to the current increase in poaching of rhino (both black and white) for their horn, specific interest exists in the privately owned horn stockpile. Of the respondents, 89 (53%) indicated that their horn stockpile is registered with the province while 22 (13%) indicated that they are not registered, the remainder did not answer the question. Of those who indicated that they are not registered, 7 (32%) indicated that they had not registered because they do not trust government¹⁸. Six of the 22 (27%) indicated that the reason they had not registered is that they do not have stock and four (18%) are in the process of applying. A significant proportion of respondents (57; 34%), however, chose to not respond to this question.

Number

Nationally 5,217 horn pieces were reported in private custody at the end of 2014 (1696 pieces at the end of 2012; n=85). The largest single stockpile was reported as 4,008 pieces. It is not possible to compare this figure to a calculated production rate from natural mortalities as it is not known if the pieces are from dead rhino or from management activities such as removing a tip when moving or treating an animal. The provincial breakdown for the survey is presented in Table 6.

Mass

Nationally 6246 kg of horn were reported in private custody at the end of 2014 (2254 pieces at the end of 2012; n=78). The largest single stockpile was reported as 3786 kg and the average stockpile, excluding the single extremely large property, is 31.7 kg. The provincial breakdown for the survey is presented in Table 6.

When compared to the 2013 (provincial database) where the total horn in private stockpiles was recorded as 6,577.05 kg (3021 pieces) these figures appear to be an under report but not by a large amount. The 2014 figures presented at a MINTECH workshop where 1835 pieces were recorded is clearly a significant under report.

¹⁸ It is commonly argued that by applying for registration, state officials become aware that there is horn stockpiled on a property, and this information is too easily leaked to criminal elements instead of remaining confidential, thus placing the property at risk.

Table 6. Provincial breakdown of horn stockpiles in private custody: 2012 & 2014.

Province	Horn Pieces (#)		Horn Mass (Kg)	
	2012	2014	2012	2014
Eastern Cape (EC)	11	57	57	173.8
Free State (FS)	2	28	0	34.8
Gauteng (GP)	6	16	0	0
KwaZulu-Natal (KZN)	11	82	8.1	65.8
Limpopo	158	579	474.1	860.7
Mpumalanga	35	157	120	585.9
Northern Cape	0	185	0	574.0
North West	1474	4116	1597	3950.6
Western Cape	0	0	0	0
Totals	1697	5220	2256.2	6255.6

Poaching

White rhino killed

Nationally 371 white rhino were reported as having died on private and communal land due to poaching during the survey period. 345 of these are animals that died directly and 26 are calves that died as a consequence of a cow being poached (Figure 2). Most white rhino on communal and private land were poached in Limpopo (174) and Mpumalanga (93) over the survey period. The provincial breakdown of white rhino lost to poaching during the survey period is presented in Table 7.

Over the three years of the survey period 49 white rhino calves (6, 10 & 33 respectively) were reported as orphaned and survived, either through human intervention or naturally in cases where they were close to weaning age. All but 5 of these orphaned calves were reported from Limpopo (20) and Mpumalanga (24).

The poaching pandemic is not only threatening to rhino. For the survey period 280 incidents that were considered to be threatening to human life (53, 78 & 149 over the three years respectively) were reported by the respondents. Worryingly, the data suggest that these incidents may be on the rise.

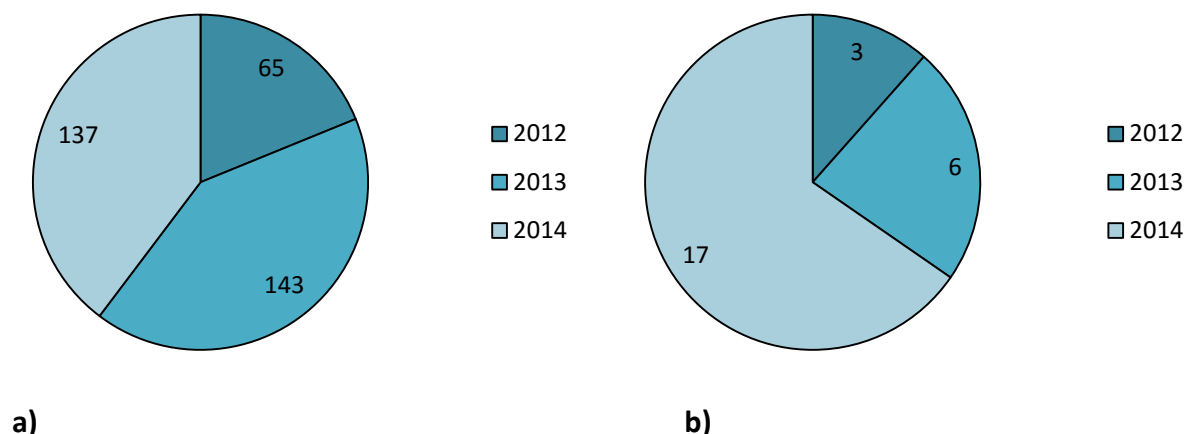


Figure 2. a) White rhino poached directly (371; n=116) and b) Calves dying as a consequence of a cow being poached for the survey period (26; n=113).

Table 7. Provincial breakdown of white rhino lost due to poaching and calves lost due to their mother (cow) being poached: 2012 to 2014.

Province	Direct poaching (#)			Collateral Calves (#)			Total
	2012	2013	2014	2012	2013	2014	All years
Eastern Cape (EC)	4	8	2	0	0	1	15
Free State (FS)	0	0	0	0	0	0	0
Gauteng (GP)	0	2	2	0	0	1	5
KwaZulu-Natal (KZN)	18	12	9	0	0	0	39
Limpopo	30	56	71	2	4	11	174
Mpumalanga	13	50	28	0	1	1	93
Northern Cape	0	0	1	1	1	0	3
North West	0	15	24	0	0	3	39
Western Cape	0	0	0	0	0	0	0
Unstated	0	0	0	0	0	0	0
Totals	65	143	137	3	6	17	371

Horn theft

The returned questionnaires indicated that a minimum of 27 incidents¹⁹ of rhino horn theft took place from private stockpiles over the survey period (n=110) totalling 369kg of horn. All reported horn theft was from properties which also reported registered stockpiles. This theft was largely concentrated in Limpopo (16 incidents; 167 kg horn; 21)

¹⁹ The questionnaire design does not allow for an accurate statement of the number of incidents.

and Mpumalanga (5 incidents; 150 kg horn), with kwaZulu-Natal (1 incident; 20 kg), Gauteng (2 incidents; 8 kg), North West (2 incidents; 16 kg) and NC (1 incident; 8 kg) each reporting stolen horn. The data for the number of pieces of stolen horn (21, 49 & 43 for each year respectively), correlate poorly with the data for the mass of stolen horn.

In response to the question “Would you like to be able to store your horn in a secure, central and auditable stockpile?”, 72 (64%) respondents were affirmative, 17 (15%) did not support the approach, 24 (21%) were undecided.

Responses to the poaching pandemic

There are various responses to the poaching pandemic that have been exercised by private and communal owners of white rhino. These range from complete disinvestment in rhino to acquiring more white rhino, banking on the market value of individual rhino increasing once the “poaching crisis is over”. Some of these options as informed by the survey are discussed here.

Complete disinvestment from rhino

The most extreme response is a complete disinvestment from white rhino by private and communal owners. The full extent of disinvestment is difficult to assess as many of the non-respondents may not have responded precisely because they no longer have white rhino. Of the 171 respondents, 26 (15.2%) indicated that they had sold all their rhino due to the poaching pandemic. An additional 13 properties are known, through communication outside of the survey responses, to have disinvested. Assuming similar levels of disinvestment and extrapolating the 15.2% disinvestment ratio across the non-respondents (168 – 13) would mean that an additional 24 properties are likely to have disinvested during the survey period making an estimated national total of 63 disinvested properties.

The average area of each the 39 properties known to have disinvested of white rhino during the survey period is 3,932 ha totalling 153,350 ha. It is not known where the rhino from these properties were sent to. The estimated average area of each of the non-responsive properties is 1695 ha²⁰. Estimating the level of disinvestment in the non-responsive properties by proportional extrapolation thus results in an additional 39,934 ha²¹ disinvested in white rhino. The estimated national total area of disinvestment is 193,284 ha. This calculates to be approximately 11.8% of the privately or communally owned rhino range at the beginning of the survey period²².

No Key rhino population experienced disinvestment. The largest property which was reported as disinvested was 18500 ha and had a pre-disinvestment white rhino population of 34 animals. Most disinvestment properties were in Limpopo while none

²⁰ Based on the 38 properties in the database for which areas are known.

²¹ The calculation performed is $(168 - 13) \times 1695 \text{ ha} \times 0.152$

²² Note: not all of this area of disinvestment was historically white rhino range as some properties are outside of this range.

were in the Northern Cape and the Western Cape. Four properties did not indicate the province (Table 8). To estimate the number of white rhino that may be affected by disinvestment in this manner the survey responses provide a minimum figure of 204 (Table 8). A probable upper limit to the number of white rhino affected by disinvestment can be obtained by extrapolating the calculated mean national white rhino density (see Table 2) across the total estimated area affected by disinvestment. This gives a figure of 554 white rhino.²³

Table 8. Breakdown by province of the respondents who have disinvested completely in white rhino and the number of white rhino affected.

Category	EC	FS	GP	KZN	LIM	MP	NC	NW	WC	?
Properties disinvested in white rhino during survey period	1	4	1	7	12	2	0	8	0	4
Reported number of white rhino affected	0	0	34	8	137	0	0	25	0	0

Sale of land

Ten respondents indicated that they had sold land that would no longer have rhino on it, but only two provided information on the area sold - this totalled 4,400 ha. By extrapolation the estimated area of land that was sold in the survey period and that no longer carries white rhino is ~ 44,000 ha or an average of 15,000 ha per annum.

Partial disinvestment from rhino

At the time of the survey, most owners/managers (70.6%) have opted to not sell any white rhino in response to the current security situation (Table 9), but many have opted to reduce their risk exposure and report that they have sold a portion of their white rhino during the survey period (29.4%) or that they intend to do so (67.8%). The number of respondents in these two categories are presented in Table 9.

Table 9. Number of respondents who in response to poaching either have, or intend to, sell white rhino (categorised by the reported percentage of the sell-off).

Category (% of population)	0	<33	33-66	67 - 99	100
Have sold white rhino	94	15	8	1	15 ²⁴
Intend to sell white rhino	80	14	10	4	10 ²⁵

²³ 193,284 ha X 0.002865 white rhino/ha

²⁴ 11 of these properties are in Limpopo, 3 in North West and one in KwaZulu-Natal.

A total number of 462 rhino were sold during the three years of the survey period (151, 167 & 144 respectively). Interpretation of these figures needs to be exercised with caution as the sales may simply represent standard commercial transactions and not necessarily risk reduction exercises. The provincial breakdown of the number of rhino sold is presented in Table 10.

Table 10. Provincial breakdown of the number of white rhino sold during the survey period. Categorised by year (n = 130).

Province	2012	2013	2014	Total
Eastern Cape (EC)	4	2	17	23
Free State (FS)	2	0	1	3
Gauteng (GP)	0	0	0	0
KwaZulu-Natal (KZN)	29	34	30	93
Limpopo	65	88	57	210
Mpumalanga	19	5	6	30
Northern Cape	13	8	10	31
North West	19	30	23	72
Western Cape	0	0	0	0
Unstated	0	0	0	0
Totals	151	167	144	462

Moving white rhino to new destinations

Not all private rhino owners sought to disinvest in white rhino during the survey period. Approximately 7% (8/117) of respondents indicated that they had opted to move all their white rhino to new properties in South Africa. Two respondents (n = 114) indicated that they had moved white rhino out of the country; in both cases it was less than a third of their white rhino population (155 & 42 respectively) that was moved and no destination country was indicated. The respondents who moved white rhino were largely from Limpopo (2) and Mpumalanga (3); Free State, KwaZulu-Natal and North West indicated one property each. Eighty eight percent (103/117) of respondents indicated that they had not moved any white rhino to alternative land in South Africa.

Thus in summary, 88% (103 of 117) of the respondents have moved no white rhino, 7% (8 of 117) of the respondents have moved all their white rhino, 1.8% (2 of 114) of the

²⁵ 5 of these are in Limpopo, 2 in KwaZulu-Natal, 2 in Eastern Cape and 1 in North West.

respondents moved their rhino out of the country and 15.2% (26 of 171) of the total respondents indicated that they had disinvested totally from white rhino.

Investment in white rhino

Twenty nine (17%) of the respondents indicated that they had bought land during the survey period that would be, or has been, populated with white rhino. The total new land acquired for white rhino between 2012 and 2014 was 116,070 ha (47,060; 11,815 & 57,195 ha respectively). Most of this land was purchased in Limpopo (56,413 ha), followed by Northern Cape (46,100 ha), Free State (5,745 ha) and North West (5,050 ha). In terms of land sales and purchase the net result was an additional 72,070 ha reported to be acquired for white rhino during the survey period.

To complement this land acquisition, a total 828 white rhino were reported to have been bought (presumably from both state and private sources although this was not stated) and released²⁶ during the survey period (294; 208 & 326 rhino per annum respectively). Clearly some of the . The provincial breakdown is provided in Table 11.

Table 11. Provincial breakdown of the number of white rhino bought and released during the survey period. Categorised by year (n = 120).

Province	2012	2013	2014	Total
Eastern Cape (EC)	8	7	4	19
Free State (FS)	19	5	1	25
Gauteng (GP)	2	0	0	2
KwaZulu-Natal (KZN)	7	10	19	36
Limpopo	36	27	146	209
Mpumalanga	0	1	20	21
Northern Cape	0	81	102	183
North West	219	75	29	323
Western Cape	3	2	2	7
Unstated	0	0	3	3
Totals	294	208	326	828

Trade perspectives

A key objective of the survey was to ascertain the views of private and communal rhino owners on selected issues of sustainable utilisation of white rhino (i.e. legal hunting, trade in rhino horn and intensification of husbandry). Of the respondents 67.5%

²⁶ These animals were likely released onto both new and existing white rhino range.

indicated that they supported legal hunting of white rhino but only 20% of respondents actually participate in hunting. Twenty five percent of respondents did not support hunting. Of the respondents 84.5% indicated support for legal trade in horn and 80.0% indicated that they would participate in this activity. Only 4.3% of respondents indicated that they did not support legal trade in rhino horn. There was less support for intensive husbandry of white rhino as a land use with 73.5% of respondents indicating support for it but only 44.4% indicating that they would participate in the activity. 6.8% of respondents were against intensification of white rhino while 32.5% of respondents said that they would not participate in the intensification of white rhino as a land use.

A summary of the respondents views are presented in Table 12.

Table 12. Respondents views (number) on selected issues related to sustainable utilisation of white rhino.

Issue	Support/Participate	(n)	Yes	No	Maybe
Legal hunting	Support	120	81	30	9
	Participate	118	24	94	0
Legal trade in horn	Support	116	98	5	13
	Participate	115	92	9	14
Intensification of husbandry	Support	117	86	8	20
	Participate	117	52	38	27

It is useful to compare the responses in Table 12 with the perceptions of respondents on the current economic value of white rhino to their operations. These are summarised in Table 13.

Table 13. Percentage of revenue currently generated by white rhino on the property.

Economic driver. (% of revenue)	(n)	0-9	10-24	25-49	50-74	75-100
White rhino trophy hunting	119	101	9	2	2	5
White rhino live sales	118	72	22	12	3	9
Contribution to tourism	118	49	20	8	13	28

Using mid-points to estimate weighted-average contributions, hunting contributed an average of 10.4% (on a median property size of 4000 ha), live sales an average of 17.9% (on a median property size of 4000 ha) and tourism an average of 34.9% (on a median

property size of 3000 ha) towards revenue generated by each property. That leaves 36.8% of each property’s revenue coming from other sources. Excluding the large intensive husbandry property²⁷, 30% of the variation in population size can be explained by the property size. National decision making with respect to the potential opening of trade in rhino horn is however more complex than simply establishing white rhino owners’ views on trade. It also allows for a range of responses from the owners. In light of the potential for South Africa to achieve approval for trade in rhino horn at the 2016 CITES COP, properties were canvassed for potential responses if the application is successful. Clearly the most preferred response at the time of the survey was to simply hold on to current rhino and to “see what happens”. Marginally over 30% of respondents indicated that they would engage in a process of reducing the rhino on their property but no time frame was set for this. The results are presented in Table 14.

Table 14. Number of respondents selecting each of the response options in relation to the potential opening of trade in rhino horn . Individuals were able to select more than one option (n=134).

Response option	#	%
Maintain stock and increase numbers by buying more white rhino	16	11.9
Maintain stock but not buy more white rhino	66	49.3
Attempt to move your white rhino to a safer location	10	7.5
Sell up to 25% of your white rhino to decrease the risks	7	5.2
Sell 25% to 75% of your white rhino to decrease the risks	12	8.9
Sell over 75% of your white rhino to decrease the risks	23	17.2

Management costs

Owning and managing white rhino is expensive and generates considerable costs. Largely they cover two functions – security and monitoring, although there are costs such as supplementary feeding and veterinary procedures. This survey requested information on the costs of security and monitoring.

Security

Decisions relating to the presence and management of white rhino on a property are related to the costs of security. This is particularly the case during a period of intensifying poaching. Responses to the survey indicate that owner/managers estimate that security costs have more than doubled since 2008 when poaching began to increase. Fifty five percent of respondents indicated that their security costs had increased by

²⁷ The property with 1076 white rhino is an example of intensive breeding and is not a natural population.

more than two and a half times the 2008 value by the end of 2014 and 73% indicated that costs had more than doubled over the same period.

Responses to the survey suggest that the national annual security bill for white rhino at the end of 2014 was in the region of R31 million (n=103) representing 4,458 white rhino or ~R6,593/rhino per annum. Extrapolating these numbers to include the maximum number of white rhino suggests a potential national white rhino security cost of up to R34.9 million annually. Respondents indicate that the equivalent costs in 2010 were in the region of R1,500/rhino per annum totalling a maximum of ~R6.3 million annually.

Monitoring

Of the 116 properties that responded to the question, 98 (84.5%) monitor their white rhino daily and an additional 11 (9.5%) monitor them weekly. Mostly this monitoring is ground based. Staffing this monitoring with sufficiently skilled personnel is important. The total and average number of people employed by the 109 respondents to this question was 646 and 5.9 per property respectively. Aerial monitoring is however considered important with 73/115 (63.5%) of respondents indicating that they use aerial surveys to supplement their monitoring, although this takes place less frequently. Thirty three percent of respondents indicated that they employ aerial monitoring more than once a year, 26.1% indicated annually and the rest were less frequent than annually. The frequency and level of participation in activities associated with monitoring which is legislated (such as DNA sampling and the placement of transponders) and for which compliance is necessary, is not as high as it is for maintaining of birth and mortality records. 58.2% of respondents indicated that less than 10% of their white rhino have transponders implanted and 32.7% indicated that more than 75% have transponders. Considering DNA samples, 21.2% of respondents indicated that DNA sample had been lodged from less than 10% of their white rhino while 48.7% indicated that they had lodged DNA for more than 75% of their white rhino. Details are summarised in Table 15.

Table 15. Number of respondents and the extent to which they conduct various monitoring activities on their white rhino population.

Activity	(n)	0-9	10-24	25-49	50-74	75-100
Rhino with transponders implanted	110	64	3	2	5	36
DNA samples lodged with RhoDIS	113	24	7	8	19	55
Detailed birth records	120	20	4	9	14	73
Detailed mortality records	120	17	3	2	5	93
Detailed records of introductions and removals	124	15	3	2	5	99

The cost to respondents of their monitoring activities per white rhino is double the security cost. The total declared annual sum for monitoring was R32.6 million (n=98) representing 2125 rhino which calculates out to be an average monitoring cost of R15,340 per rhino per annum. Extrapolating this to the estimated national herd that is definitely present and to the additional white rhino that are possibly present, calculates to be between R68.4 million and R81.3 million²⁸ per annum respectively.

Hunting

Of the respondents to the survey, 14 properties indicated that legal white rhino hunt(s) had taken place on the property during the survey period accounting for a total of 38 white rhino being hunted (13, 15 & 10 in 2012, 2013 & 2014 respectively). The largest number of white rhino hunted on any one property in any year is 4 and the most a single property hunted over the three years is 9. Properties where respondents indicated that hunting took place ranged in size from 4500 ha to 60,000 ha (median 11,000 ha) and the white rhino populations on those properties ranged from 4 to 247 (median 21). Based on the number of respondents who indicated that they hunt, it appears that many of the non-respondents are hunters as 67 confirmed hunts (out of 94 applications) took place in 2014 (against the reported 10 hunts) – see the hunting section in the discussion below for more on this topic.

Discussion

Property / response stratification

In a survey such as this, information that is not received from properties remains “unknown”, as opposed to “absent” or “zero”. Thus, based on the survey, it is not possible to know how many properties have white rhino on them in South Africa. It is also not possible to know the average size of the properties of the non-respondents. Using incomplete, and possibly incorrect, information from the old PROA database, an estimated average property size of non-respondents has been calculated as 1,695 ha or approximately 17% of the average property size of the respondents. This suggests that there may be some stratification in the respondents with the larger properties – possibly with greater resources? – being more responsive than the smaller properties which may feel more “exposed” by “letting it be known” that they have white rhino on them.

Horn

Theft

Estimating the total amount of horn that was stolen, and thus is available to enter into the illegal markets, based on the survey is difficult. The respondents report 369 kg of horn as having been stolen in the three years (averaging 123 kg per annum). As the

²⁸ For “Definites” and “Probables” only the figure is R75.9 million annually.

respondents represent 55% of the currently understood total number of properties, this figure could potentially be almost doubled giving an estimated 700 kg of rhino horn. Using the average figure of 5.88 kg horn per white rhino (Pienaar *et al.* 1991) this equates to the horn of ~ 120 white rhino that has been potentially been stolen over the survey period. As this information is all based on properties that indicate registered stockpiles, it remains unclear what the figures may be for properties which do not register horn stockpiles. This remains a significant weakness in our understanding, and our ability to understand, the illegal presence and movement of rhino horn within the country.

Stockpiles

The total number of pieces (1697) and mass (6255.6 kg) of horn reported to be in private stockpiles represents a substantial increase on 920 pieces and 1,805 kg reported for the end of 2010 Milliken & Shaw (2012) and suggests better information is being accessed through the survey. This view is strengthened when one adds the estimated annual mortality rate of 2% (Hall-Martin *et al.*, 2009) over five years, using average horn weights (Pienaar *et al.* 1991), to the estimated privately owned stockpile based on Emslie's data in Milliken *et al.* (2009). This result in an estimated 7,690 kg which suggests that the currently reported stocks account for ~ 80% of the actual horn that is potentially in stockpiles. Thus the discrepancy between estimates of what should possibly be there and reported levels of private stocks has narrowed in a manner that begins to give greater confidence in the reported figures.

Hunting

The figures from the respondents for the number of properties where hunting has taken place over the three years of the survey (13, 15 & 10 respectively) falls substantially short of the 91, 110 and 108 hunting applications that were received by DEA in these years. This suggests a disproportionately high number of properties that hunt within the non-respondent group of the survey. This possibility was tested by crosschecking the details of the hunting applications against the revised PROA database. Of the 71 individuals (or properties; if only a property name was provided) who applied for hunting permits over the three years, only 9 responded to the Questionnaire. 62 were non-respondents or were not on the PROA list²⁹ in the first place. The relative contribution of hunting to the economy of land owners may increase once this bias is effectively accounted for.

Trends

Although interesting and useful, trends between surveys need to be considered with caution due to methodological differences. Consideration of some of the trends is however informative and these are presented below, largely for the past four surveys.

²⁹ Due to the incomplete nature of the Hunting applications database and/or the different names (of both the properties as well as the representative staff) that are used in hunting applications it is commonly not possible to be certain if a non-respondent property is on the PROA list or not.

Number of properties

Changes in the number of properties surveyed and responses received, as well as the ratio between them, as reported over the past four surveys of white rhino on private property are presented in Figure 3. The variation over time appears to be driven by methodological differences – see original reports for details.

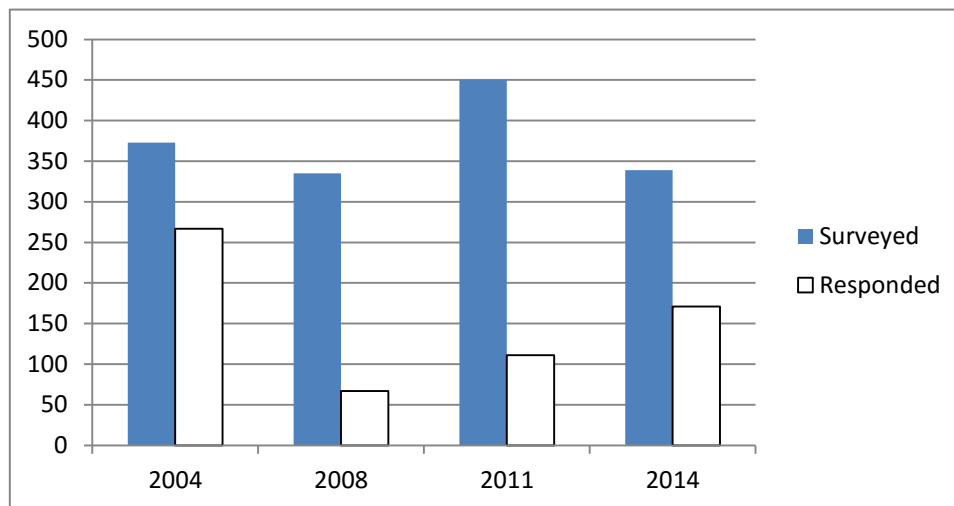


Figure 3. The numbers of properties surveyed and responses received since 2002.

Total numbers of white rhino

The trend in the total number of white rhino under private, and more recently communal, ownership, between 1987 and 2014, appears to be one of steadily increasing numbers (Figure 4).

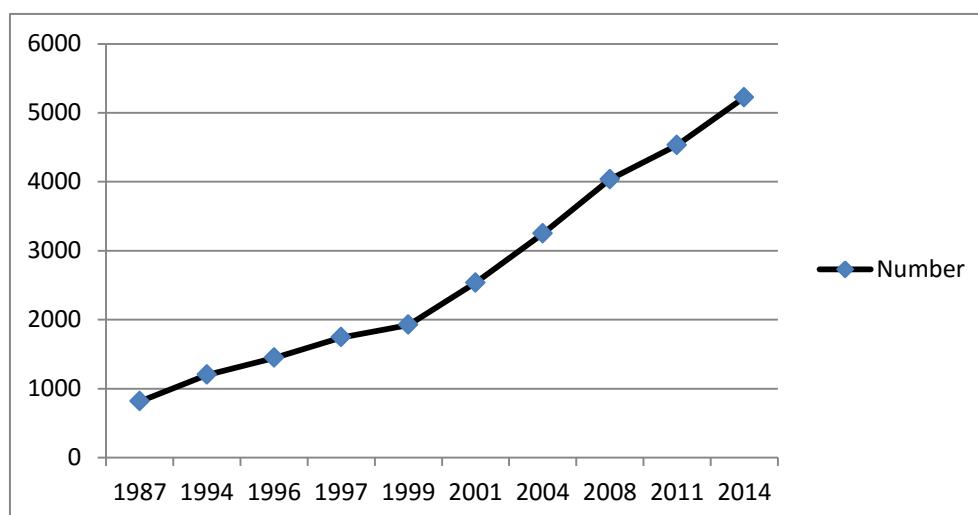


Figure 4. The trend in number of white rhino under private and communal ownership between 1987 and 2014.

The trend needs to be understood with due recognition of the uncertainty that is inherent in the numbers, but there is currently no sign of a significant reduction private in the private white rhino herd in response to the poaching pandemic.

Sex ratio

Due to the relative significance of female rhino in breeding it is useful to understand the ratio of male to female rhino in the national privately owned white rhino herd and how this may vary over time. Figure 5 presents the sex ratio data for the past four surveys.

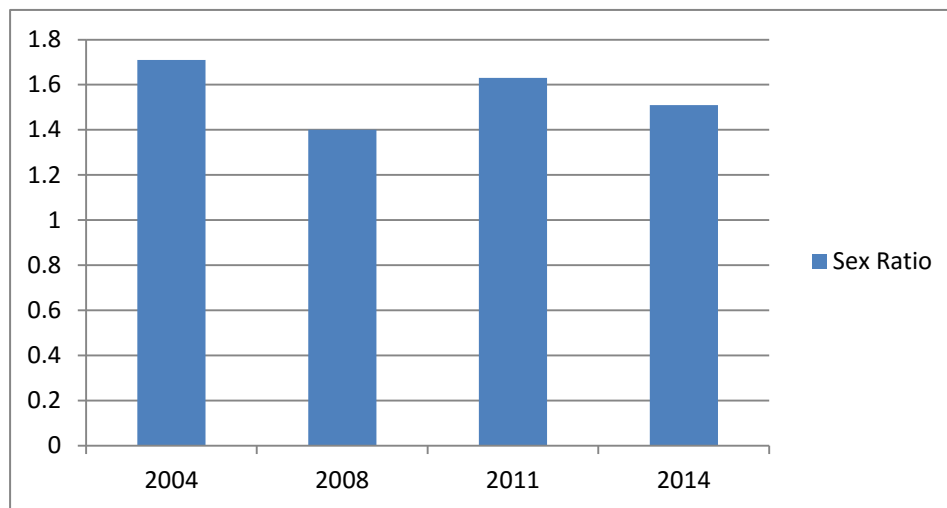


Figure 5. The sex ratio of white rhino under private ownership since 2002.

Private sales of white rhino

The private sale of white rhino serves as an indicator of the market interest in the species. Figure 6 presents the average number of white rhino sold by private owners per annum since 2002 as indicated by the past four surveys.

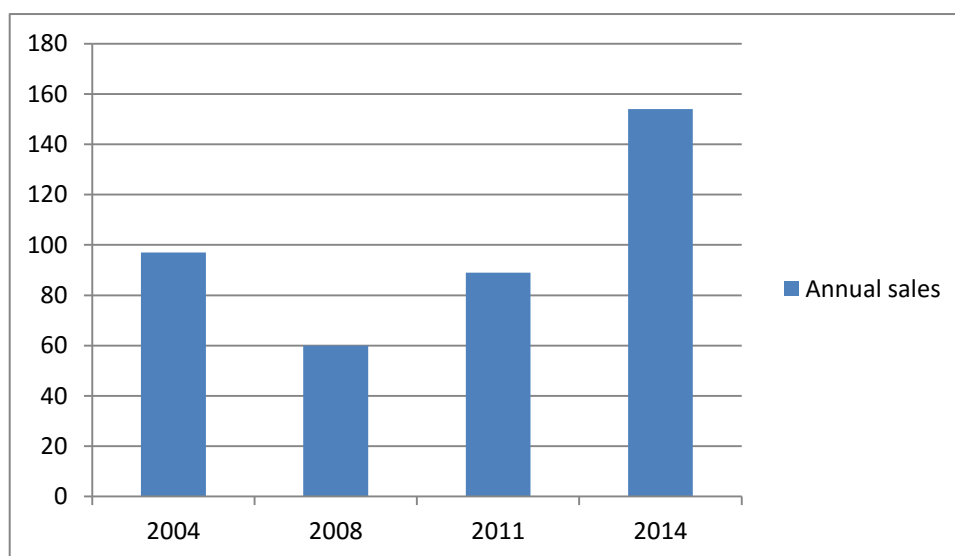


Figure 6. The number of white rhino sold per annum by private owners since 2002.

Poaching mortality

With the national increase in poaching activity since 2008, it is reasonable to anticipate an increase in poaching on private property as well as on state land. The reported annual loss of privately owned white rhino to poaching since 2002 is presented in Figure 7.

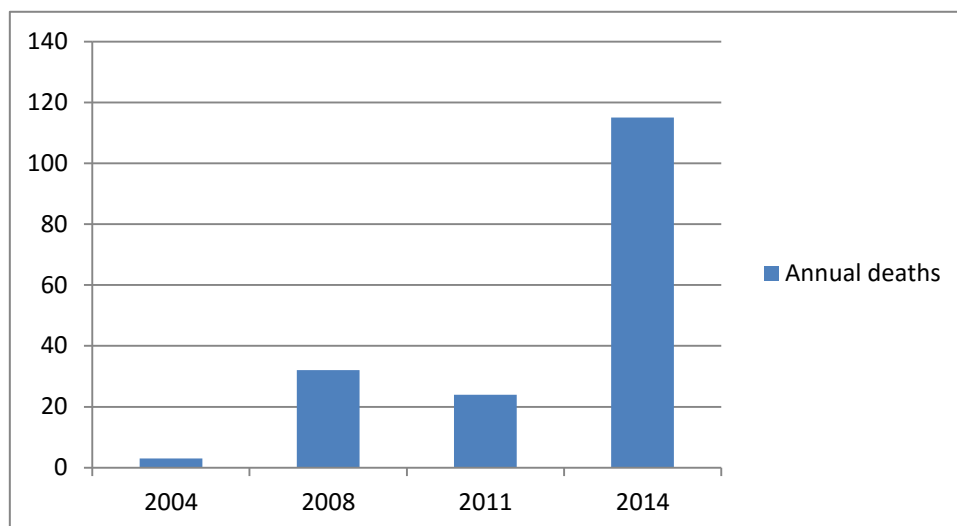


Figure 7. Number of privately owned white rhino killed by poaching per annum since 2002.

Private horn stockpiles

As horn is the target of much of the poaching activity, privately owned stockpiles are also vulnerable and it is useful to understand how these may have changed over time. Figure 8 presents both the mass and number of pieces of horn in the reported privately owned stockpiles for the past four surveys.

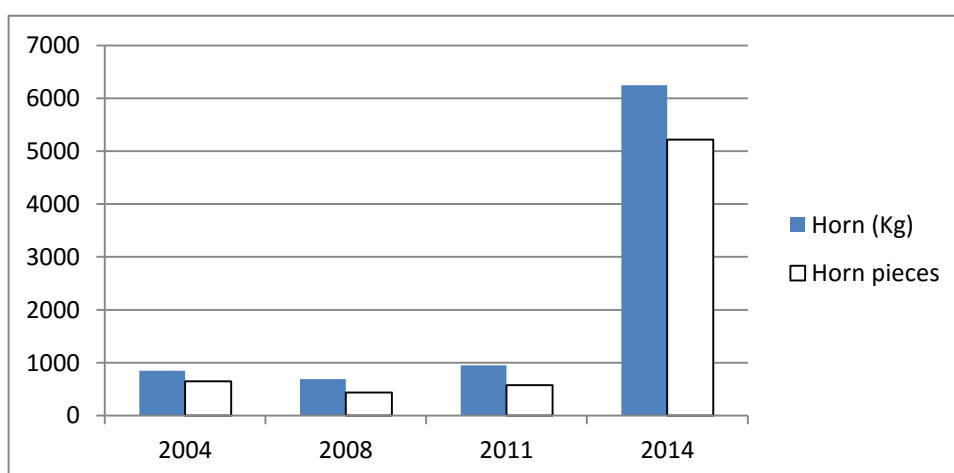


Figure 8. Reported mass and number of pieces of rhino horn in privately owned stockpiles since 2002.

Horn stolen

The amount of horn stolen from privately owned stockpiles since 2002 is presented in Figure 9. There are no data from the 2004 and 2011 surveys. This represents a significant improvement in declaration of stockpiles.

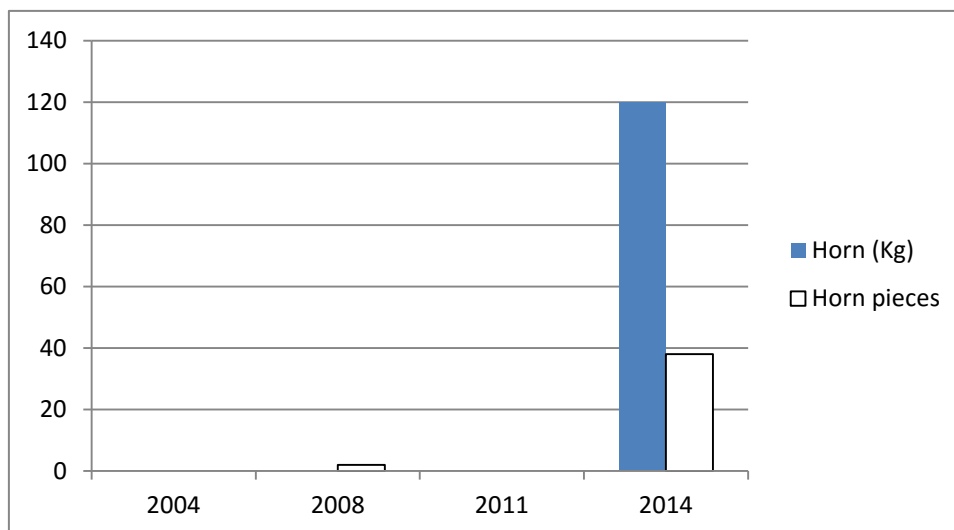


Figure 9. Reported mass and number of pieces of rhino horn stolen from private stockpiles since 2002.

Hunting

The number of white rhino that were reported as being legally hunted each year on private property has varied considerably over the past four surveys. The average figures are presented for the past four surveys in Figure 10. The methodology in 2008 was substantially different, and more costly – involving farm visits, and this may explain the increased number of annual hunts reported. The figures for 2014 are known to be substantially below the number of applications for hunting that were received by the state (see discussion under **Hunting** above).

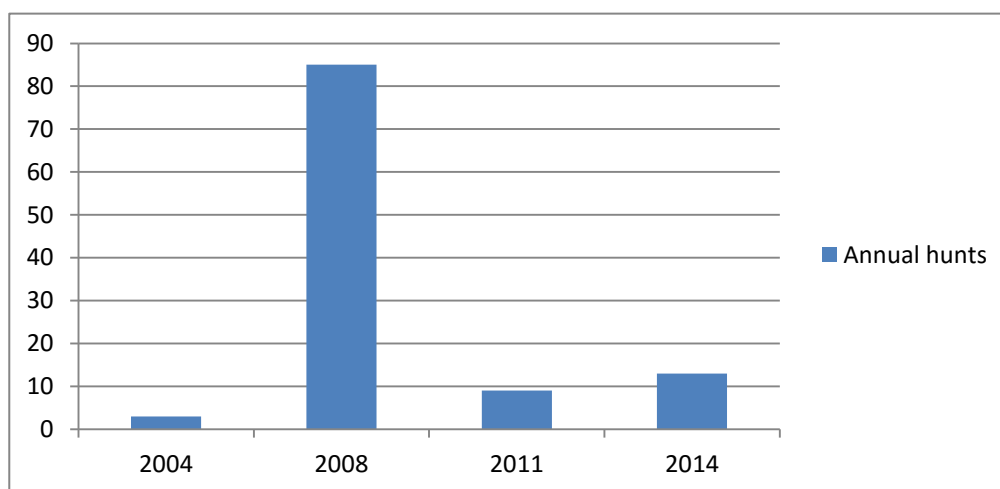


Figure 7. Average number of privately owned white rhino reported as hunted per annum since 2002.

Acknowledgements

I would like to acknowledge the important contribution made by the Chairperson of PROA, Pelham Jones, for the database of white rhino properties, owners and contact details as well as for support in distributing and following up on the questionnaires. This made an important difference to the number of respondents to the survey. Keryn Adcock was an important contributor to the development of the questionnaire which was signed off by Mike Knight and Pelham Jones took it through the process of acceptance by the PROA Board. Provincial RMG and PROA representatives as well as Keryn Adcock contributed by assisting with contact details over and above those on the PROA database which enlarged the reach of the survey. Richard Emslie contributed by calculating the figures for the Northern Cape based on the new information provided. Richard Emslie, Mike Knight and Sam Ferreira are thanked for useful comments on a draft of the report. DEA, EWT and Mike Knight representing the RMG ably administered the survey.

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Appendix I

a)



15th June 2015

Dear white rhino owner / manager,

We trust this finds you well.

As many of you are aware, the joint efforts of the state, private and communal sectors saw our white rhino population grow from 1,800 in 1968 (when they were only on one state reserve), to 18,900 on state, private and communal lands (i.e. 93% of Africa's white rhinos), in South Africa and a approximately 1,500 elsewhere in Africa.

It is important to note that private and communal rhino currently make up approximately 25% of the total. This is a remarkable conservation success story – and one we want to sustain!

Keeping tabs on the status of the country's white rhino population is a difficult but crucial task. Knowing how many we have and how well they are breeding is particularly important as a fast breeding population provides an essential buffer against escalating threats from poaching. See Appendix I for details on the value of good white rhino information.

The SADC Rhino Management Group (RMG) has been contracted by the Department of Environmental Affairs to undertake an independent survey of the current status of white rhino on private and communal land in South Africa. This survey is to cover a three year period from 2012 to 2014.

The RMG, which has a reputation for keeping information secure, has the support of the Private Rhino Owners Association (PROA) for the survey. PROA are assisting by distributing this questionnaire to private and communal white rhino owners and managers to members. Others will receive the questionnaire from Dr Dave Balfour.

The contents of the completed questionnaires will be kept completely **confidential**.

The raw data will not be released. Information will only be released in summary form with no mention of individual properties. All properties will have unique identification numbers so that no property names will be used once the data are captured.

As a property with white rhino we request you to complete the attached questionnaire and return it to Dr Dave Balfour at environ1@mweb.co.za or fax it to 0865955804. The Green and Orange TABS are essential to complete. The Blue TAB is optional but very useful to complete. It should not take much of your time for a real benefit to rhino in South Africa.

We need the information returned to us by Wednesday 1 July 2015.

Please acknowledge receipt of this email, and feel free to contact any one of us with any questions.

Regards,

Dr Mike Knight

Chairman: SADC RMG

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WHY YOU SHOULD COMPLETE AND SUMMIT THE WHITE RHINO QUESTIONNAIRE TO THE RMG

Since the surge in rhino poaching in 2007, we appreciate that this a deeply challenging time for everyone involved in rhino conservation – and that filling in the questionnaire seems time-consuming and not a real priority. However, we urge you to **please email**

your completed RMG questionnaire, with as much info as possible to Dr Dave Balfour at environ1@mweb.co.za.

Responsible white rhino population monitoring and management will help us ensure the long-term viability of this endangered species.

THIS IS WHAT THE INFORMATION WILL BE USED FOR:

1. **CITES:** RMG data assists IUCN's African Rhino Specialist group (AfRSG), with mandated Country reports to CITES (Convention on International Trade in Endangered Species). Importantly without credible information it is difficult to develop confidence in our national rhino management efforts and thus to gain support for our country motivations at CITES. The findings from this survey will help with the planning and justification for ongoing strategic white rhino conservation management initiatives for the country. Previously such information won CITES approval for the listing of South Africa's white rhino population on Appendix II for the **trade in live animals and hunting trophies. We all know how important these activities are to the wildlife industry.**
2. **HUNTING PERMITS:** Providing accurate information on the number, age and sex of white rhino that have been legally hunted, as well as the economic contribution (revenue, jobs, etc.) of this industry is critical in being able to continuously argue the case for this important aspect of sustainable use of natural resources. The recent exploitation of legal hunting by "pseudo-hunters" from non-traditional hunting countries (e.g. Vietnam & Czech Republic) has brought the industry into disrepute and resulted in stricter permitting requirements. Thus far the white rhino hunting industry has operated without the need for a national quota. However if it is perceived to be out of control, pressure will mount to further regulate the industry – which is not ideal. **For hunting to play a positive role we need accurate information to argue the case.**
3. **NATIONAL WHITE RHINO POPULATION MONITORING and MANAGEMENT:** Regular surveys of white rhino outside state reserves started in 1987 and provided a database on the contribution of the private and communal sector to the national herd. **This information is critical in promoting the role of private rhino owners in conservation.**
4. **GENETICS:** Over time, the RMG Data will be able to link to the genetic identity of rhinos from the RhoDIS database of the Veterinary Genetics Laboratory at the University of Pretoria. **These genetic identities have a proven forensics role in solving rhino crime.**

b) (Note: there is an error in the sequential numbering of the questions)

Dear white rhino owner / manager

As you are aware, for some time now South Africa has been under enormous pressure from rhino poaching. This has affected you and your rhino. As part of the work to reduce this pressure South Africa, through the Department of Environmental Affairs, is contemplating tabling a proposal to CITES to legalise trade in rhino horns. For this proposal to succeed, it is essential that we have reliable information on the contribution of the private & communal rhino to the national conservation effort and the impact that poaching is having on this important sector of white rhino conservation.

WHAT DO WE NEED/ WHAT DOES THIS MEAN FOR YOU?

- 1) We need reliable information on the status and trends of white rhino on private & communal land, the numbers of white rhino being moved within SA or out of SA, changes in land area with rhino, the impacts of poaching and the investment, costs & effort going into rhino ownership versus the benefits.
- 2) We realise that this information is highly sensitive but without it we cannot argue the value and contribution of the private & communal white rhino to rhino conservation as a whole, nor can your expenses and efforts be recognised.
- 3) We thus strongly encourage you to contribute by providing as much information as you can by completing this form.
- 4) Your information will be treated as **STRICTLY CONFIDENTIAL** and properties will be given a unique code in the database to ensure this remains so - no raw data will be released.
- 5) The completed questionnaires and contents their contents will be kept completely confidential.
- 6) Information will only be made available in summarised form as part of a collective total or average or as private rhino owner views or perspectives and it will be used to support CITES proposals as well as guide the fight against poaching.

If you have any concerns or enquiries please contact one of the people below

Dr Dave Balfour 082 803 6436/ Dr Mike Knight 083 640 4918

We urge you to be part of the solution and to provide as much information as you can - to help us "make the case" for the private white rhino community.



Thank you!

PERSONAL DETAILS

	OWNER	MANAGER (or specify)
First name		
Surname		
Company Name		
Landline phoneNo.		
Cell		
Fax		
E-mail		
Postal address		
Preferred contact?	telephone / cell / e-mail / fax / post	telephone / cell / e-mail / fax / post

PROPERTY DETAILS

Property/ Game Farm/ Reserve Name	
Province	
District	
Property Size (ha)	

Primary Management objective of property?

This could be Private recreation / Eco-tourism / Breeding / Hunting / Conservation / Other (please describe)

IMPORTANT: Please return completed questionnaire to Dr Dave Balfour at:

environ1@mweb.co.za or fax to 0865955804

ALL INFORMATION WILL BE KEPT COMPLETELY CONFIDENTIAL

Property Name:

Knowledge of the number of rhino owners and their herd sizes, is critical to understanding & declaring internationally, the status of South Africa's white rhino population)

I am the owner / manager:

1	Do you currently own/manage <u>white rhinos</u> ? <i>[If "yes" please complete this sheet. Please also consider completing the blue TAB "WR Population Details" as the extra information will assist us].</i>	Yes	No	Note: For the entire page, please place an "X" in the relevant box or type a number or comment as appropriate.		
	2	Do you own/manage <u>black rhinos</u> ? <i>[We are conducting a separate survey on black rhino and want to pick up on any black rhino properties that we don't know of].</i>	Yes			No
3	How many white rhino did you have on the property in December of each year? <i>[We are looking for your best estimate for each year].</i>	2012	2013			2014

Economic Value of Rhinos

We need to understand & quantify how important white rhinos are to our national wildlife economy

4	How important are white rhino <u>live sales</u> in your current wildlife business? <i>[Approximate % of revenue generated from the property].</i>	0 to 10%	10 to 25%	25 to 50%	50 to 75%	over 75%
	5	How important is white rhino <u>tourism</u> in your current wildlife business? <i>[Approximate % of revenue generated from the property].</i>	0 to 10%	10 to 25%	25 to 50%	50 to 75%
6	How important is white rhino <u>trophy hunting</u> in your current wildlife business? <i>[Approximate % of revenue generated from the property].</i>	0 to 10%	10 to 25%	25 to 50%	50 to 75%	over 75%

What other importance or value do white rhino have for you? (eg. enjoyment, conservation, education etc.).

7 How much did **rhino security cost** you per month, over and above what you would have paid for normal game farm security?

2010 R _____ 2014 R _____

8 Since the escalation of poaching in 2008, how much did your total security costs increase to the end of 2014?

<49%	50 to 99%	100 to 149%	150 to 200%	(or specify if more)

Poaching

Helping to understand the level of poaching threat to rhino owners/managers, field staff and the game farm business, as well as to rhino populations.

9 How many white rhino (all ages) did you lose to poaching each year ?

2012	2013	2014	(No. of rhino)

10 How many calves died due to the mother being poached [calf itself not poached], between & including 2008 to 2014?

2012	2013	2014	(No. of calves)

11 How many calves were orphaned by poaching, but still alive, between and including 2008 to 2014?

2012	2013	2014	(No. of calves)
			-

12 How many times have your life, or any of your staff's life, been threatened or harmed during attempted / actual rhino poaching incidents or horn-theft incidents?

2012	2013	2014	(No. of incidents)
		-	-

13	How many kilograms of horn stock was stolen from your property ?	2012	2013	2014	(Kg Horn)	
14	How many pieces of horn stock were stolen from your property?	2012	2013	2014	(No. of pieces)	
Optional comments regarding horn thefts, poaching, TOPS declaration etc.						
<u>Responses to current poaching threat</u>			<u>Part of understanding the levels of investment or disinvestment in rhino ownership & conservation</u>			
15	What % of your rhino <u>have you sold due to poaching risks?</u>	None	< 33%	33-67%	over 67%	100%
16	Do you <u>intend</u> selling some of your rhinos <u>due to poaching risks?</u>	None	< 33%	sell 33-67%	over 67%	sell 100%
17	Have you <u>sold land</u> that once carried white rhino to non-rhino owners? [<i>i.e. the land is no longer available for rhino</i>].	Yes	No	Hectares sold:		
18	What % of your rhinos have you moved to an alternative safer site <u>in South Africa?</u> [<i>Please complete a form for that property too</i>].	None	< 33%	33-67%	over 67%	All

19	What % of your rhinos have you moved to an alternative safer site <u>outside of South Africa</u> ?	None	< 33%	33-67%	over 67%	All
20	How many hectares of land have you <u>bought</u> in the past three years on which you now have or plan to have white rhino?	2012	2013	2014	(Hectates bought)	
21	How many white rhino did you <u>release</u> onto your property in the past three years?	2012	2013	2014	(Number of rhino)	
22	How many white rhino did you <u>sell</u> from the property in the past three years?	2012	2013	2014	(Number of rhino)	
Optional comments regarding response to the current poaching threat.						
<p>- <u>Legal trophy hunting</u> <u>Understanding attitudes to hunting and levels of trophy hunting undertaken</u></p>						
23	Do you support sustainable, legal trophy hunting of white rhinos? <i>[If you wish please thoughts in the comments section].</i>	Yes	No	Not sure		

24	Do you conduct legal white rhino trophy hunting on your property?	Yes	No		
25	How many white rhino were legally trophy hunted on the property each year?	2012	2013	2014	(No. of rhino)
<u>Legal trade in rhino horn</u>		<u>Understanding attitudes to legal horn trade as South Africa contemplates a horn trade submission to CITES</u>			
26	Do you support the concept of legal trade in rhino horn within a controlled and regulated system?	Yes	Maybe	No	
27	Would you personally want to participate in such a trade if it was internationally approved?	Yes	Maybe	No	
28	If RSA does not succeed in achieving approval for imminent legal horn trade at the 2016 CITES meeting, which of the options are you most likely to follow with your white rhino?	Maintain stock and increase numbers by buying more			
		Maintain stock but not buy more			
		Attempt to move your white rhino to a safer location			
		Sell up 25% of your white rhino to decrease the risks			
		Sell 25% to 75% of your white rhino to decrease the risks			
		Sell over 75% of your white rhino to decrease the risks			
Comments / concerns around the legal trade in horn:					

Intensive rhino farming

Understanding attitudes to intensifying rhino management / production as South Africa contemplates a horn trade submission to CITES

29	If SA is permitted to trade internationally, do you think intensive farming of white rhino should be allowed in SA?	Yes	Maybe	Depends	No
30	If SA is permitted to trade internationally, would you consider farming white rhino intensively?	Yes	Maybe	No	
Comments / concerns around the intensive rhino farming issue?					

Horn Stocks

Understanding & securing rhino horn stocks is vital as South Africa contemplates a horn trade submission to CITES

31	Is your rhino horn stockpile registered with your province?	Yes	No		
32	If not what is your reason for not doing so?	Did not know I had to	Distrust of officials	Applied but still waiting	Other
33	How many pieces of [white & black] rhino horns did/do you have? (optional)	2012	2014	<i>(No. of pieces of horn)</i>	
34	What weight of [white & black] rhino horns did/do you have? (optional)	2012	2014	<i>(Kilogram of horn; to 3 decimal places if possible)</i>	

35	Would you like to be able to store your hornstock in a secure, central, auditable stockpile?	Yes	No	Not sure	
Comments on centralized stockpile issue? E.g. should it be government or privately managed? Would it ease your burden of securing your horn stocks or not? Etc.					
<u>Monitoring of rhinos</u>		<u>We need to gauge how well South African private rhino owners really know their rhino white rhino</u>			
36	How frequently do you monitor your rhino population?	Daily	Weekly	Monthly	Annually
37	What % of your white rhino population have deliberate rhino ear notching and documentation of individual identification details?	0 to 10%	10 to 25%	25 to 50%	50 to 75%
38	How many trained staff member do you have <u>specifically monitoring rhino</u> [e.g. by regular ground patrols/surveys]?	_____			
39	Do you make use of aerial surveys to count your total white rhino population?	No	More than once a year	Annually	Every few years

40	What percentage of your white rhino have horn & body transponders?	0 to 10%	10 to 25%	25 to 50%	50 to 75%	over 75%
41	What percentage of your white rhino have had DNA samples taken and submitted to the RhoDIS System?	0 to 10%	10 to 25%	25 to 50%	50 to 75%	over 75%
42	For what percentage of your white rhino do you have detailed records of births <i>[dates, mother, potential father]</i> for the past five years?	0 to 10%	10 to 25%	25 to 50%	50 to 75%	over 75%
43	For what percentage of your white rhino do you have detailed records of mortalities <i>[dates, causes, time since death, how/who found carcass etc.]</i> for the past five years?	0 to 10%	10 to 25%	25 to 50%	50 to 75%	over 75%
44	For what percentage of your white rhino do you have detailed records of introductions & removals <i>[age, sex, dates, rhino ID's, origins/ destinations, prices etc.]</i> for the past 5 years?	0 to 10%	10 to 25%	25 to 50%	50 to 75%	over 75%
45	How much does rhino monitoring <u>cost</u> you, over & above normal game monitoring costs, on average?	_____	R /month	_____	R/year	
<p>Please consider answering the questions on the next "blue" tab if you are able - it will help considerably</p> <p>Further comments / suggestions / issues that you would like to raise:</p>						
<p>Please return this completed form with the other forms to Dr Dave Balfour at environ1@mweb.co.za or fax to 0865955804.</p>						

Summary information of your white rhino population for 2012/ 2013/ 2014.

IMPORTANT: if there were no events in a particular category for a year (eg. no births / hunts / poaching etc.), please enter a "0" (zero) to indicate this. (a blank you do not have the information).

[Examples of human-related deaths are: Capture-related, vehicle accident, shot in self defence, boma-feed related etc.]

Name of Property:	Name of owner / Manager:					
Overall Summary	2012		2013		2014	
<i>Please indicate if number is exact or an estimate</i>	Exact	or	Estimate	Exact	or	Estimate
1. Year-End Population Totals						
2. Management Introductions during year						
3. Births during year						
4. Natural (Non-human-related) Deaths each year						
5. Illegal Killings (poached/snared) each year						
6. Other Human-Related Deaths each year						
7. Management Live Removals each year						
8. Management Hunts each year						
Comments:						
Population Sex/Age Structure at Year-end	2012		2013		2014	
	Exact	or	Estimate	Exact	or	Estimate
MALES						
Calves (< or = 2 yrs.)						
Sub-adults (2.1 to 6.9 yrs.)						
Adults (> or = 7 yrs)						
FEMALES						
Calves (< or = 2 yrs.)						
Sub-adults (2.1 to 6.9 yrs.)						
Adults (> or = 7 yrs)						
UNKNOWN SEX						
Calves (< or = 2 yrs.)						
Sub-adults (2.1 to 6.9 yrs.)						
Adults (> or = 7 yrs)						
TOTALS						

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