

**The viability of legalising international trade in rhino horn and the
possible effect on rhino poaching in South Africa**

by

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DECLARATION

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I, Willem de Beer (ID number 5705025009084), declare that this thesis, entitled “The viability of legalising international trade in rhino horn and the possible effect on rhino poaching in South Africa” is my own work, and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references. This thesis has not, in part or in whole, been previously submitted for any other degree or examination at this or any other university.

I further declare that ethical clearance to conduct the research has been obtained from the University of South Africa.

Signature

Date

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ABSTRACT

The existence of the rhino is under serious threat. South Africa has experienced a dramatic increase in rhino poaching since 2008. With the current trend of poaching, rhino in South Africa will soon become extinct. The current strategies to protect rhino have proved to be ineffective.

The common view is that rhino poaching is morally wrong, and associated with greed and evil intentions and that rhino poaching must be stopped; however, there are two schools of thought regarding two main approaches (in association with current strategies) to be used in order to stop or limit poaching.

The first school of thought supports the CITES ban on international trade in rhino horn, and believes that rhino poaching can only be stopped by eliminating demand (the “conventional approach”). The second school of thought is in favour of the legalisation of international trade, and argues that any solutions to the rhino poaching problem must address the underlying economic forces. This is called the sustainable approach.

The research aimed to investigate the effectiveness of the ban on international trade in rhino horn, as well as the viability of legalising international trade. The effectiveness of the current strategies was also investigated.

A qualitative research design was used, and eighteen participants were selected in order to obtain information by means of semi-structured interviews and questionnaires. A literature review was also conducted, for the purpose of

evaluating the responses of participants, and also for the purpose of validity and reliability.

The findings indicated that the scales tip in favour of a well-managed, legalised trade, *inter alia*, to make funds available to rhino owners, rhino custodians and the government, on the one hand, and, on the other hand, to reduce the reward and increase the risk to the poacher.

Findings also indicated that a legalised trade cannot be implemented in isolation; it goes hand in hand with increased security and improved law enforcement, while strategies such as dehorning and translocation still have a role to play.

Finally, findings also indicated that communities need to be involved in the sustainable use approach. These communities are currently excluded from the benefits derived from the neighbouring protected areas, thereby making them susceptible to being recruited as poachers.

Keywords

Anti-trade, CITES, community conservation, CoP, legal trade, poaching, pro-trade, rhino, sustainable use, trade ban, TRAFFIC.

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ABBREVIATIONS AND ACRONYMS

ADMADE	Administrative Management Plan for Game Management Areas
AFRSG	African Rhino Specialist Group
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CBNRM	Community Based Natural Resource Management
CBP	Captive Breeding Programme
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CoP	Conference of the Parties
CPA	Criminal Procedure Act 51 Of 1977
C.s.	<i>Ceratotherium simum</i>
CSO	Central Selling Organisation
D.b.	<i>Diceros bicornis</i>
DEA	Department of Environmental Affairs
DNA	Deoxyribonucleic acid
DNPWM	Department of National Parks and Wildlife Management

DPCI	Directorate of Priority Crime Investigations
EC	Eastern Cape Province (South Africa)
EIA	Environmental Investigation Agency
EMI	Environmental Management Inspector
EWT	Endangered Wildlife Trust
FS	Free State Province (South Africa)
GDP	Gross Domestic Product
GMPO	Greater Mekong Programme Office
GP	Gauteng Province (South Africa)
GTA	Game Theft Act 105 of 1991
HSI	Humane Society International
ICDP	Integrated Conservation Development Project
IFAW	International Fund for Animal Welfare
IMC	Inter-Ministerial Committee
IPZ	Intensive Protection Zone
IRF	International Rhino Foundation
IUCN	International Union for Conservation of Nature
KNP	Kruger National Park

KZN	KwaZulu-Natal Province (South Africa)
LEMA	Limpopo Environmental Management Act 7 of 2003
LIM	Limpopo Province (South Africa)
MAP	Mapungubwe National Park
MET	Ministry of Environment and Tourism (Namibia)
MNP	Marakele National Park
MOU	Memorandum of Understanding
MP	Mpumalanga Province (South Africa)
MTPA	Mpumalanga Tourism and Parks Agency
NC	Northern Cape Province (South Africa)
NEMA	National Environmental Management Act 107 of 1998
NEMBA	National Environment Management: Biodiversity Act 10 of 2004
NEMLA	National Environmental Management Laws Amendment Act 14 of 2013
NEMPAA	National Environment Management: Protected Areas Act 57 of 2003
NGO	Non-Governmental Organisation
NW	North West Province (South Africa)

NWCRU	National Wildlife Crime Reaction Unit
OSCAP	Outraged South African Citizens Against Rhino Poaching
PHASA	Professional Hunters' Association of South Africa
RhODIS	Rhino DNA Index System
PPF	Peace Parks Foundation
PROA	Private Rhino Owners Association
RIM	Rhino Issue Management
RMA	Regulated Market Approach
SAHGCA	South African Hunters and Game Conservation Association
SANParks	South African National Parks
SAPS	South African Police Service
SRI	Save the Rhino International
TAC	Technical Advisory Committee
TCM	Traditional Chinese Medicine
TCP	Traditional Chinese Pharmacopoeia
TOPS	Threatened or Protected Species
TraCC	Terrorism, Transnational Crime and Corruption Center

TRAFFIC	Wildlife Trade Monitoring Network
UAV	Unmanned aerial vehicle
WC	Western Cape Province (South Africa)
WESSA	Wildlife and Environmental Society of Southern Africa
WRSA	Wildlife Ranching South Africa
WWF	World Wide Fund for Nature
WWF-ARP	WWF- African Rhino Program

GLOSSARY

Anti-trade: In this thesis it refers to people or organisations which do not support legal trade in rhino horn.

CITES: An international agreement between states (governments) to ensure that international trade in wild animals and plants does not threaten their survival (Hanks, 2015a).

Community conservation: Conservation which allows neighbouring communities to benefit from the conservation activities (Els & Bothma, 2010).

CoP: The main decision-making body of CITES and comprising all its member states (Duffy, 2010).

Dolus eventualis: Latin for “intention imputed because of an awareness of possibility (since the result, though not intended, is foreseen as a possibility) (Hiemstra & Gonin, 1992).

Offtake: Removal of rhino by means of legal hunting.

Occupatio: Latin for “appropriation of ownerless property” (Hiemstra & Gonin, 1992).

Pachyderm: A group of large mammals that includes elephants, rhinoceroses and hippopotamuses (*Cambridge advanced learner's dictionary*, 2013).

Poaching: Illegal hunting of any animal (Duffy, 2010).

- Pro-trade:** In this thesis it refers to people and organisations which support a legal trade in rhino horn.
- Range:** Area or country where a specific species of rhino occurs.
- Rei vindicatio:* Latin for “recovery of property by the owner from any person in possession of it” (Hiemstra & Gonin, 1992).
- Res nullius:* Latin for “belonging to no one” (Hiemstra & Gonin, 1992).
- Sustainable use:** The use of wildlife without jeopardising the continued survival of species (Duffy, 2000).
- Traditio:* Latin for “delivery” (Hiemstra & Gonin, 1992).
- TRAFFIC:** The leading non-governmental organisation working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development (Hanks, 2015a).

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CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

Rhinos are the most threatened large mammal species in the world (Brebner, 2013:31). All five species of rhino have been subjected to human exploitation in the past, and are consequently threatened with extinction.

In Africa, rhino numbers originally dropped because of hunting, until conservation measures were implemented; subsequently, rhinos have been poached for their horn. Africa has lost approximately 100,000 rhinos since 1970. In South Africa alone, more than 4,000 rhinos have been lost since 2000. The numbers of one of the African species – the black rhino, *Diceros bicornis*, fell from 100,000 in 1960 to 5,000 in 2013. Another African species – the northern white rhino, *Ceratotherium simum cottoni*, declined from 2000 in 1970 to a single population of 17 in 1984, down to six (6) in 2014 (‘t Sas-Rolfes, 1997a:1-2). The estimated number of white and black rhino in Africa is shown in Table 1.1:

Table 1.1: Estimated white and black rhino numbers by subspecies and countries as at October 2013.

Countries, Subspecies, and Range	White Rhino				Black Rhino				
	<i>C.s. cottoni</i>	<i>C.s. simum</i>	Total	Trend	<i>D.b. bicornis</i>	<i>D.b. michaeli</i>	<i>D.b. minor</i>	Total	Trend
	(northern)	(southern)			(south- western)	(eastern)	(southern- central)		
Angola					1			1	
Botswana		185	185	Up			9	9	Up
Kenya	4	390	394	Up		631		631	Up
Malawi							26	26	Up
Mozambique		1	1	Down					
Namibia		524	524	Up	1,750			1,750	Up
South Africa		18,933	18,933	Up	208	68	1,792	2,068	Stable
Swaziland		84	84	Stable			18	18	Up
Tanzania						100	27	127	Up?
Uganda		14	14	Up					
Zambia		10	10	Up			27	27	Stable
Zimbabwe		284	284	Down			424	424	Down
2012 Total	4	20,425	20,429	Up	1,959	799	2,323	5,081	Up
2010 Total	4	20,160	20,164		1,920	740	2,220	4,880	

Source: Milliken, 2014:15.

In Asia, the Javan rhino, *Rhinoceros sondaicus*, and the Sumatran rhino, *Dicerorhinus sumatrensis*, were mainly eliminated through habitat loss, although poaching also played an important role. The Indian rhino (greater one-horned rhino), *Rhinoceros unicornis*, has been facing a drop in numbers due to habitat loss, hunting and poaching.

Asian rhinos are at enormous risk. The Javan rhino historically roamed from north-eastern India through Myanmar, Thailand, Cambodia, Laos, Vietnam, and Indonesia. In 2015, there were just 63 Javan rhinos left in the wild. The Sumatran rhino population was estimated at fewer than 100 individuals in 2015, located in small pockets in Sumatra and Kalimantan in Indonesia. The species was officially declared extinct in the wild in Malaysia in 2015. Approximately 3,500 Indian rhinos remain in Nepal and north-eastern India (World Wide Fund for Nature (WWF), 2015).

Although there is no scientific proof of its medicinal value, rhino horn is highly prized in traditional Asian medicine. Rhino horn carvings are increasingly being used as prestige gifts among the wealthy elite. Almost all rhino horn sourced from Africa continues to be sold to countries in East and Southeast Asia for use in traditional Asian medicine, and to Yemen for making jambiya (traditional dagger) handles. China, Hong Kong, the Philippines, Singapore, Thailand, South Korea and Vietnam have all been implicated as having a role in the illicit trade in horn coming from Africa, with particular concern over the increasing and highly organised role of Vietnamese nationals since 2004.

WWF-SA and TRAFFIC's Greater Mekong Programme Office (GMPO) conducted research in Vietnam in 2013. This research surveyed 720 people in

Hanoi and Ho Chi Minh City. It was found that buyers and users of rhino horn primarily consider it a status symbol to be given to family members, business colleagues or people in positions of authority (WWF, 2013).

Other rhino products are also in demand for traditional Asian medicine, with two incidents recorded in South Africa during 2004, involving the attempted export (by Vietnamese nationals) of rhino genitals and dried intestines (Milledge, 2007:98). At one time, the Calcutta Zoo found a ready market for small bottles of urine from their captive Indian rhino (Ehrlich & Ehrlich, 1982:31).

According to 't Sas-Rolfes (1997b:26), a series of events in the Middle East precipitated a rhino conservation crisis. By the late 1970s, CITES had started to become operational, and in 1975 the white rhino and the three Asian species were listed on CITES Appendix I. The black rhino was moved to Appendix I in 1977. Since 1994, the South African population of white rhino has been downlisted to Appendix II, and this has allowed trade in live animals and trophy hunting. The implication of the aforementioned Appendices will be explained in section 2.2.2.

The rhino trophy hunting market has encouraged increased private sector investment in live rhino production and expansion of habitat in South Africa in the last 20 years. White rhino numbers in South Africa were estimated at approximately 20, 170 animals in December 2012 (Emslie, 2012:6). In South Africa, rhino farming was seen as an economic venture to provide for the growing trophy hunting industry. Since the increase in poaching, the risks outweigh the economic incentives involved in rhino farming. Increasing risks,

and costs related to protection, together with declining incentives, led to some private owners looking to get rid of their rhino.

Vietnam and China have experienced an increase in demand in recent years; consequently, the price of rhino horn has increased. In 2013, the price of rhino horn increased to \$60,000 per kilogram. According to a report compiled by the Dalberg Global Development Advisors (WWF/Dalberg, 2012:11) rhino horn is more valuable, on the black market, than diamonds and cocaine, and poaching is seen as a far less risky criminal operation than the drug trade. Criminal networks keep plundering wildlife, with little regard for the consequences. Illegal wildlife trade is therefore a low-risk business with high returns.

As with tiger products and abalone, the involvement of powerful and influential criminal cartels such as the Mafia, the triads and Yakuza, presents a real problem for enforcement of international regulations such as the CITES trade ban. Criminal networks that deal in drugs and people trafficking were attracted by the wildlife trade, because of the low risk compared with that of drug trafficking (Duffy, 2010:118).

Rhino horn commanded such high prices that dealers viewed buying horn as an investment, and the Environmental Investigation Agency (EIA) reported in the early 1990s that 10 tonnes of horn were stockpiled in China and Taiwan (Duffy, 2010:119). It appeared that dealers were trying to cash in on the high prices of rhino horn by making it scarcer through stockpiling. The poachers, most of the time poor locals, are usually the only ones caught, leaving the masterminds and their network safe and operational.

These high profits led to the establishment of well-organised international poaching syndicates, which deploy advanced technologies ranging from night vision scopes to darting equipment and helicopters, to carry out their mission. Poachers have intensified their search for rhino horn, driven by growing market demands in Asia.

These poachers have also recruited pseudo-hunters, including Vietnamese citizens and Thai prostitutes, as well as Czech and Polish nationals, as a means of exporting rhino horn to Vietnam. South Africa has since stepped up its response by suspending the issue of hunting permits to Vietnamese nationals, in April 2012.

The sharp rise in the price of rhino horn even causes theft from museums and private premises. According to Milliken and Shaw (2012:10), at least 65 rhino horns have been stolen from public displays in South Africa, and a minimum of 46 horns have been taken from European institutions. In April 2014, 40 horns worth more than R160 million were stolen from the offices of the Mpumalanga Tourism and Parks Agency in Nelspruit, Mpumalanga. A rise in the number of antique rhino horn objects and trophies sold through auction houses, has also raised concerns about the final destination of the items.

The current rate of growth in the number of rhinos exceeds the number of deaths, but at the current rate of poaching, rhinos will, in the near future, slide into a negative growth rate, and eventually face extinction.

As rhinos become increasingly threatened, increasing levels of human intervention are required to protect them. The escalation in poaching has exposed the weaknesses of current rhino protection measures. It is a simple

but undeniable fact that if there were no demand for rhino horn, there would be little or no rhino poaching. Controlling the illegal supply of horn through anti-poaching measures is a very expensive strategy, and its long-term effectiveness is threatened by declining budgets (Emslie & Brooks, 1999:25).

In practice, declining government grants have tended to particularly threaten capital and operational budgets. Apart from affecting field conservation efforts, inadequate operational and capital budgets are demoralising for staff working in the field (Emslie & Brooks, 1999:33). Under such circumstances, by helping to support operational programmes and capital purchases, donor agencies can play a critical role in helping to keep many of the successful rhino conservation areas a success. The Howard Buffett Foundation, for instance, has recently donated R255 million towards rhino conservation. This is a three-year initiative to combat rhino poaching in the KNP (Thakuli, 2014:9).

While demand for rhino horn has been the underlying cause of the declining rhino population, poverty, corruption, civil wars, lack of institutional capacity and inadequate government expenditure have all facilitated poaching. Species conservation is typically implemented either through the designation of protected areas, or through regulations to protect vulnerable or important species. However, in the developing world, resource constraints greatly limit the ability of governments to implement conservation legislation (Rowcliffe, De Merode & Cowlshaw, 2004:2631).

During the 1970s, and throughout the 1980s, rebel forces fighting against their respective governments in Mozambique and Angola are also reported to have killed pachyderms in large numbers, in order to finance their military

operations. Africa's recent spate of civil wars have been the source of automatic weapons and ammunition used by the poachers (Thomson, 1992:27).

In the decade 1970 to 1980, consumption levels in the major consumer markets appeared to be less than the amount of horn leaving Africa. According to Emslie and Brooks (1999:29), this led to the theory that some horn wholesalers and middlemen may have been stockpiling rhino horn as a speculative investment. Such activity may have been based on the assumption that, as rhinos became rare (or extinct), supplies of horn would decrease, allowing massive increases in the price of existing illegal horn stocks.

The current poaching crisis in South Africa has provoked a great deal of debate about the best way to stop poaching and save African rhino populations, as well as what approach, or combination of approaches, ought to be adopted to ensure that rhino population numbers continue to grow. Private owners of rhino are also developing a range of increasingly innovative approaches to make rhinos less attractive to poachers and end-users, including dehorning, as well as introducing dye or even poison into the rhino horn. These methods have limited applicability and sizeable cost implications.

Rhino numbers in the rest of Africa have declined to such an extent that South Africa holds about 93% of the African population of white rhino, and an estimated 36% of all black rhino (Endangered Wildlife Trust, 2013a:9). Figures compiled by the Department of Environmental Affairs (DEA) (Table 1.2) show a dramatic increase in poaching over recent years:

Table 1.2: Rhino (black and white) poaching statistics: South Africa.

Total	NC	WC	KZN	FS	EC	NW	MP	LIM	GP	MAP (SAN PARKS)	MNP (SAN PARKS)	KNP (SAN PARKS)	SA
7	0	0	7	0	0	0	0	0	0	0	0	0	2000
6	0	0	2	0	0	0	0	0	0	0	0	4	2001
25	0	0	5	0	0	0	0	0	0	0	0	20	2002
22	0	0	8	0	0	0	0	0	0	0	0	14	2003
10	0	0	3	0	0	0	0	0	0	0	0	7	2004
13	0	0	1	0	0	2	0	0	0	0	0	10	2005
24	0	0	5	0	0	0	2	0	0	0	0	17	2006
13	0	0	0	0	0	0	3	0	0	0	0	10	2007
83	0	0	14	0	1	7	2	23	0	0	0	36	2008
122	0	0	28	2	3	10	6	16	7	0	0	50	2009
333	1	0	38	3	4	57	17	52	15	0	0	146	2010
448	0	6	34	4	11	21	31	74	9	0	6	252	2011
668	0	2	66	0	7	77	28	59	1	0	3	425	2012
1004	0	0	85	4	5	87	92	114	8	0	3	606	2013
1215	5	1	99	4	15	65	83	110	5	1	0	827	2014
3993	6	9	395	17	46	326	264	448	45	1	12	2424	TOTAL

Source: South Africa. Department of Environmental Affairs, 2015:n.p.

As far as the black rhino is concerned, there are three subspecies indigenous to South Africa:

- the southern-central black rhino, *Diceros bicornis minor*, which also occur in Zimbabwe, Mozambique and Tanzania.
- the eastern black rhino, *Diceros bicornis michaeli*, which occur in the Addo Elephant National Park.
- the south-western black rhino, *Diceros bicornis bicornis*, which also occur in Namibia, Kenya and Tanzania.

As far as the white rhino is concerned, South Africa has one subspecies, namely the southern white rhino, *Ceratotherium simum simum*. This subspecies also occurs in Namibia, Zimbabwe, Swaziland, and out-of-range Kenya, Zambia and the Ivory Coast.

When the poaching impact in South Africa is considered in terms of the two rhino species, white rhinos have been more affected. Although white rhinos are far more numerous in South Africa than black rhinos, losses are proportionally higher. Black rhinos form more than 9% of all rhinos in South Africa, yet account for only 4.5% of the deaths recorded from 1990 to 30 April 2012 (Milliken & Shaw, 2012:72).

1.2 JUSTIFICATION OF THE STUDY

Rhino poaching has become a serious international concern, particularly in the conservation fraternity. Rhinos are threatened with extinction, because they are being poached for their horn. The common view is that rhino

poaching is morally wrong, and associated with greed and evil intentions ('t Sas-Rolfes, 1990:1).

Society is in general agreement that rhino poaching must be stopped; however, there are two schools of thought regarding two main approaches (usually in association with certain other techniques) to be used, in order to prevent rhino poaching.

The first school of thought refers to those who believe that the rhino horn trade is wrong, and therefore has to be stopped. This can only be achieved by eliminating demand, mainly through the restrictions on trade. This attitude towards the problem, which is the same as that which motivated the ivory ban in 1989, is referred to by 't Sas-Rolfes (1993:8) as the "conventional approach".

The second school of thought follows an alternative approach, and sees the overexploitation of biological resources as the result of underinvestment, and argues that any solution to the rhino poaching problem must address the underlying economic forces driving the process ('t Sas-Rolfes, 1993:9). This point of view is also referred to as "sustainable use". The promoters of this school are in favour of legal trade in rhino horn. In South Africa, the Cabinet has approved the development and submission of a proposal, by the Department of Environmental Affairs, to the Seventeenth Conference of the Parties of CITES, in 2016, to be held in South Africa, to lift the ban on international rhino horn trade and introduce it in a regulated format.

Supporters of each school have raised various arguments in favour of their preferred school of thought, and against the other. This issue will be dealt with in the literature review in Chapter 2.

The focus of this study is on an investigation of the aforementioned approaches – more specifically, the viability of the alternative approach, as, at first sight, it seems that the trade ban is no longer effective.

The possibility of legalising national (domestic) trade in rhino horn (within South Africa) has already been investigated by the South African Department of Environmental Affairs (DEA) (Taylor, Brebner, Coetzee, Davies-Mostert, Lindsey, Shaw & 't Sas-Rolfes, 2014), hence the purpose of this study is to investigate the viability of legalising the international trade in rhino horn, and to comment on, as well as add some value to, the arguments already raised by the experts and other roleplayers, in this regard.

1.3 PROBLEM STATEMENT

Growth in the market demand for rhino horn threatens to outpace the potential rate of supply; hence market prices should continue to rise. This makes rhino horn worthy of the attention of entrepreneurs who engage in rhino horn trade. Rising prices could induce speculative buying and stockpiling. This, in turn, inevitably leads to more poaching.

Various strategies and techniques are currently in place to help combat the onslaught on rhino in South Africa, including the following:

- Dehorning
- Treatment of the horn with poison/chemical substance

- More intensive law enforcement/increased security
- Translocation
- Demand reduction

Although the aforementioned strategies contribute towards addressing the poaching problem to a certain extent, the root of the problem (the increasing demand and illegal supply) is not being attended to, leading to an escalation in rhino poaching.

Keeping in mind the high levels of rhino poaching – not only in South Africa, but also in other countries in Africa, it seems that the trade ban imposed by CITES is not effective any longer. Different circumstances prevail today, from those of ten to twenty years ago. The CITES ban on trade is being criticised by rhino owners and conservationists as being ineffective, and the horn has become worth more than the animal itself. The attention of illegal traders has shifted from buying horn domestically, and moving it out of South Africa illegally, to poaching rhino domestically and moving the horn out of South Africa illegally – but, in this case, leaving the animal dead.

At the 2016 meeting of CITES, the delegates of the member countries will have to decide whether or not to legalise international trade. The onus will be on the supporters of the sustainable use approach to prove that trading of rhino horn will unequivocally work, and that the lifting of the ban on international rhino horn trade will not be detrimental to rhino populations, and will do away with poaching and illegal trade. The promoters of this approach will need a two-thirds majority.

The problem statement of this research is therefore the following:

“Despite the ban on international trade in rhino horn, poaching of rhino has increased. Poaching syndicates have capitalised on the CITES ban”.

As long as there is a demand for rhino horn, effective means of supplying it without killing the animal, needs to be developed.

1.4 RESEARCH QUESTIONS

According to De Vos, Strydom, Fouche and Delport (2011:323), research questions form the backbone of the qualitative design. It is important that the research questions, conceptual framework, design and methods, are compatible.

The research questions in this thesis are as follows:

- Does the CITES ban on international trade in rhino horn provide an effective measure to stop or prevent poaching?
- Can the lifting of the ban on international trade in rhino horn discourage poaching and save the rhino from extinction?
- How can legal trade be regulated internationally?

1.5 OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

1.5.1 To discuss the following topics:

1.5.1.1 The legal position, with regard to poaching of rhinos in South Africa.

1.5.1.2 The legal position regarding ownership of rhinos in South Africa

1.5.1.3 Sustainable use

1.5.2 To evaluate the effectiveness of the following strategies to prevent or stop poaching:

1.5.2.1 DNA profiling

1.5.2.2 Dehorning

1.5.2.3 Poisoning/chemical treatment of the horn

1.5.2.4 Law enforcement

1.5.2.5 Demand reduction

1.5.2.6 Translocation

1.5.3 To investigate the following:

1.5.3.1 The effectiveness of the ban on international trade in rhino horn

1.5.3.2 The viability of legalising international trade in rhino horn

1.6 CHAPTER OUTLINE OF THESIS

The research study is structured as follows:

Chapter 1: Introduction

Chapter 2: Literature review

Chapter 3: Research methodology

Chapter 4: Results and discussion

Chapter 5: Conclusion and recommendations

1.7 SUMMARY

This chapter presented information pertaining to the different species of rhino worldwide, as well as the numbers of the different species still alive in the wild in certain countries. Reasons for the decline in numbers are also given. The problem statement, research questions and objectives of the study, are also discussed.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter provides the necessary information to understand the context of the topic of this research project.

The legal position regarding the protection of rhinos in South Africa, as well as the importance of wildlife conservation will be discussed.

The concept of poaching and the effectiveness of certain strategies to stop/prevent poaching will be investigated.

Different views on sustainable use, the viability of legalising international trade in rhino horn and the effectiveness of the CITES ban on international trade in rhino horn will be discussed.

2.2 LEGAL POSITION PERTAINING TO THE PROTECTION OF RHINOS

The legal position regarding wild animals is also closely related to “ownership”, which will be dealt with in section 2.3.

The regulation of wild animals in South Africa has three concurrent sources: international treaties and agreements, national legislation and provincial ordinances. While each operates in a somewhat different sphere, they also overlap and strongly influence one another (Strydom & King, 2014:395).

2.2.1 National legislation

In terms of section 24 of the Constitution of the Republic of South Africa, Act 108 of 1996 (South Africa, 1996a), everyone has the right –

- (a) to an environment that is not harmful to their health or well-being; and
- (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
 - (i) prevent pollution and ecological degradation;
 - (ii) promote conservation; and
 - (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

According to Glazewski (2005:68), the environmental right, and other rights relevant to environmental concerns, ought to be seen against the backdrop of international trends and developments, including “soft law” developments. Many of these international soft law declarations, conventions and other instruments allude to the environmental and related rights now contained in the Constitution.

In South Africa, nature conservation has historically always been under the purview of the provinces. The Constitution respects this historical position by stipulating that “nature conservation, excluding national parks, national botanical gardens and marine resources” is a matter of concurrent national and provincial competence.

2.2.1.1 Framework Environmental Legislation: National Environmental Management Act 107 of 1998 (NEMA) (South Africa, 1998a)

NEMA was passed in November 1998, and came into force on 29 January 1999 (South Africa, 1999). NEMA contains an extensive list of principles that apply throughout the Republic to the actions of all the organs of state that may significantly affect the environment. Section 2(4)(a)(vi) states that “the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised”.

2.2.1.2 National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) (South Africa, 2004a)

NEMBA was promulgated in June 2004, and most of its provisions came into force with a Government Notice published in the *Government Gazette* of 1 September 2004 (South Africa, 2004b).

The overall purpose of NEMBA, as set out in the preamble and the objectives section, is as follows:

- The management and conservation of South Africa’s biodiversity and its components.
- The protection of species and ecosystems that warrant national protection.
- The sustainable use of indigenous biological resources.

- The fair and equitable sharing of benefits arising from bioprospecting, including indigenous biological resources.
- The establishment of a South African National Biodiversity Institute.

To achieve the abovementioned objectives, the Minister may, in terms of section 9(1)(a), publish norms and standards in the *Government Gazette*, including those for the management and conservation of the country's biodiversity and its components, or for the restriction of activities which impact on biodiversity.

Chapter 1 of NEMBA provides that the Act gives effect to conventions affecting biodiversity; this would include CITES.

Chapter 4 of NEMBA focuses on the protection of threatened and protected ecosystems and species. The purpose of Chapter 4 is to do the following:

- Provide for the protection of ecosystems that are threatened or in need of protection to ensure the maintenance of their ecological integrity.
- Provide for the protection of species that are threatened or in need of protection to ensure their survival in the wild.
- Give effect to South Africa's international obligations under agreements regulating international trade in "specimens" of endangered species, such as CITES.

- Ensure that the utilisation of biodiversity is managed in an ecologically sustainable way.

The Minister may, in terms of section 56(1), publish in the *Government Gazette* a list of “critically endangered species”, “endangered species”, “vulnerable species” and “protected species”. Activities involving these listed species are either restricted, or in some cases prohibited, in terms of section 60(1).

The Threatened and Protected Species regulations (TOPS), published in the *Government Gazette* of 16 April 2013 (South Africa, 2013a), apply to the carrying out of restricted activities, including specimens of species that have been listed in terms of section 56 of NEMBA as threatened or protected (South Africa, 2013a).

Both the black and white rhino are included on the list of threatened or protected species, in terms of section 56(1) of NEMBA:

- Black rhino, *Diceros bicornis* – Endangered species: indigenous species facing a high risk of extinction in the wild in the near future, although it is not a critically endangered species; and
- White rhino, *Cerathotherium simmum* – Protected species: indigenous species of high conservation value or national importance, that requires national protection (South Africa, 2004a).

According to the Endangered Wildlife Trust (2013a:15), these species may have a different classification in the provincial legislation, but this does not

affect their national classification. Where provincial legislation provides for less stringent measures, with regard to rhino, than stipulated in national legislation, the national legislation will apply.

Enforcement of the provisions of NEMBA and its subsidiary legislation is shared across various tiers of government. More specifically, it comes within the jurisdiction of the Environmental Management Inspectorate, a network of national, provincial and local government officials. The Inspectorate enjoys broad enforcement powers, including inspection, search, seizure and powers of arrest, as well as the administrative authority to issue compliance notices.

In order to curb pseudo-hunting of rhinos, norms and standards for the marking of rhinos and rhino horn, and for the hunting of rhino for trophy hunting purposes, were published in the *Government Gazette* of 20 July 2009 (South Africa, 2009a). This notice was replaced by a later notice published in the *Government Gazette* of 10 April 2012 (South Africa, 2012).

The latter makes provision for new norms and standards, according to which all live rhinos sold and transported have to be microchipped. All rhino horns, regardless of how they were acquired, have to be microchipped within five days. In addition to the microchips, if the horn, or part of it, is more than 5 centimetres in length, the issuing authority is required to mark it with indelible ink. This information is currently kept and updated in a national database. The new norms and standards also state that when live rhinos are darted in order to be moved, samples of the horn and blood have to be collected for DNA sampling.

Regarding trophy hunting, in addition to the application for a hunting permit, applicants have to submit proof of membership of a hunting association recognised by the applicant's country of residence, a curriculum vitae indicating the applicant's experience, proof of previous experience in hunting an African species, and a copy of the applicant's passport. A hunter can only hunt one white rhino for trophy purposes within a 12-month period.

The horns, together with the rest of the trophy, have to be transported by a duly authorised person directly to the taxidermist or similar facility, to be processed and prepared for export.

2.2.1.3 Moratorium on the national trading in rhino horn

Currently, the domestic trade in rhino horn and derivatives are prohibited, in terms of a national moratorium published in the *Government Gazette* of 13 February 2009 (South Africa, 2009b), in an attempt to stop rhino horn bought legally in the domestic market, being exported illegally.

At the Rhino Summit in October 2010, hosted by the Minister of Water and Environmental Affairs, the Department agreed to commission a feasibility study to determine the viability of the legalisation of trade in rhino horn in South Africa (Taylor *et al.*, 2014:7). These authors came to the following conclusion:

South Africa should not lift the national moratorium at the present time. However, it should immediately start developing a secure national electronic permitting system to bring non-compliance issues under control. This must be linked to a rhino database that includes

rhino horn stockpile and DNA profile information. Private rhino owners must be incentivised to continue protecting rhinos during this period.

According to the team who investigated the implications of lifting or not lifting the national moratorium, the following would be the implications of the lifting of the moratorium (Taylor *et al.*, 2014):

- (i) Lifting the national moratorium may lead to laundering of illegal rhino horn into legal trade, and leakage of rhino horn into the illegal international market.
- (ii) Lifting the national moratorium may tarnish South Africa's international conservation reputation.
- (iii) Lifting the national moratorium may result in/lead to compliance and enforcement challenges.
- (iv) Lifting the national moratorium may send conflicting messages to CITES about South Africa's position on trade.
- (v) Lifting the national moratorium will do little to reduce poaching.

The implications of not lifting the national moratorium would be as follows (Taylor *et al.*, 2014:85):

- (i) The incentive to poach rhinos will remain high. (This seems to be a contradiction in the findings of these authors.)
- (ii) Protecting rhinos may become financially unsustainable and lead some private rhino owners to de-stock.

- (iii) Live-sale prices of rhinos may decrease, and reduce the incentive to protect them.
- (iv) Storing rhino horn will become an increasing security risk for private owners.
- (v) Private rhino owners may consider taking legal action against the South African government.
- (vi) Illegal activities might be perversely stimulated rather than reduced.

The aforementioned implications could also apply to lifting or not lifting the ban on international trade in rhino horn.

2.2.1.4 The National Environmental Management Laws Amendment Act (NEMLA) Act 14 of 2013

NEMLA is aimed at strengthening the regulatory and enforcement requirements, to prevent the abuse of the permitting system. It was promulgated in 2013 (South Africa, 2013d), and is the first of a two-part piece of legislation dealing with management of the environment.

NEMLA ensures that even a person who has knowledge of a crime being committed, can be charged and convicted of the offence. In terms of NEMLA, any specimens in transit through the country must have the necessary documentation. This will help to prevent the movement of illegal specimens.

NEMLA will also strengthen the regulatory and enforcement provisions in the hunting industry. It allows the Minister to limit the number of permits that can

be issued, in order to protect the species. An issuing authority will, in future, be able to suspend, defer or refuse a permit.

2.2.1.5 The South African Government's strategies to protect rhino

2.2.1.5.1 *Biodiversity Management Plan for Black Rhino*

The Biodiversity Management Plan for Black Rhino in South Africa was published in the *Government Gazette* of 25 January 2013 (South Africa, 2013b). This plan forms part of the South African government's efforts to ensure the survival of South Africa's rhino population. The 10-year (or short-term) conservation goal is to achieve an average South African meta-population growth rate for the two sub-species of black rhino, of at least 5% per annum. The plan further states that protection remains a key activity to minimise rhino losses from illegal activity, through effective law enforcement, improved labour relations and effective criminal investigation and prosecution, as well as the securing and monitoring of rhino horn stockpiles.

2.2.1.5.2 *National Strategy for the Safety and Security of Rhinoceros Populations in South Africa*

This strategy was adopted in 2010, by the Department of Environmental Affairs (2011). The strategy was necessitated by a drastic increase in the number of incidents of rhino poaching in South Africa, and the continued leakage of certain horn stocks into the international illegal trade. The strategy is applicable to all relevant law enforcement and conservation agencies, as well as private land owners, non-governmental bodies, and communities involved in the management of rhino populations.

The purpose of the strategy is to provide guiding principles to inform decision-making processes, strategic planning, and operations, aimed at reducing the effects of poaching on rhino species, as well as to ensure the successful arrest, conviction and sentencing of poachers, illegal traders and crime syndicates operating locally, nationally, regionally and internationally.

The purpose is to also provide better control and monitoring of rhino horn stockpile management, and to promote improved management of the conditions under which rhino may be legally hunted.

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

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

- Investigating proactive security measures aimed at facilitating regulated and controlled international trade in rhino species and associated by-products.

According to a media statement by the DEA, on 6 August 2014 the South African government decided on integrated strategic interventions for the management of rhinoceros in South Africa (Department of Environmental Affairs, 2015a).

2.2.1.5.3 *Integrated Strategic Management*

In order to address the growing poaching problem, the South African government decided to implement a more vigorous integrated strategic management approach, aimed at reducing the threat to rhinos, as well as improving the biological management of the species. The integrated interventions adopted by the government are as follows:

- Compulsory interventions, which include proactive anti-poaching initiatives, the implementation and improvement of actionable intelligence, as well as the introduction of responsive legislation and policy amendments to address rhino poaching.
- The increase in the rhino numbers through, for example, translocation to low risk areas, as well as range- and population expansion.
- International and national collaboration and cooperation. During 2013 and 2014, the DEA concluded several Memoranda of Understanding (MOUs) with Mozambique, Vietnam and the

People's Republic of China. The DEA is also working with the Peace Parks Foundation (PPF), the World Wide Fund for Nature (WWF) and the Security Cluster, on a project to be driven by the Terrorism, Transnational Crime and Corruption Centre (TraCC). The TraCC project involves looking at the concept of "following the money", in order to crack syndicate enterprises by analysing relevant information to detect and trace funds and monies used in rhino poaching activities (Department of Environmental Affairs, 2015a).

- Long-term sustainability measures. The long-term sustainable solutions are linked to the creation of alternative economic opportunities for communities bordering on protected areas, creating incentives to promote/facilitate rhino ownership, and the consolidation of rhino populations across different land uses in South Africa, including national, provincial, private and communal land.

2.2.1.5.4 Rhino Issue Management (RIM)

RIM was set up in 2012 to help the development of a common understanding of the main issues concerning the protection and sustainable conservation of rhino. The team investigated rhino conservation, safety and security, as well as rhino commerce and trade. RIM compiled a report in 2013 (Department of Environmental Affairs, 2013:29), and recommended the re-establishment of legitimate trade in rhino horn, as well as the preparation of an immediate application to CITES based on the following:

- Banning trade has not reduced poaching in the face of increased demand.
- Rhino do not need to die for the horn to be harvested.
- State-owned horn can be sold to improve wild rhino protection, and to contribute to conservation budgets.
- South Africa should control all sales, using an appropriate model, and protecting against predatory buying tactics.
- South Africa should use, as part of its application to CITES and as part of its lobbying process, the first econometric “Rhinonomics” model.
- South Africa should remove the moratorium on domestic trade.
- Demand side management strategies should be agreed on with consuming nations.

2.2.1.5.5 *Committee of Inquiry investigating the feasibility of trading in rhino horn*

On 10 February 2015, the Minister of Environmental Affairs introduced the Committee of Inquiry tasked with investigating the feasibility of trade in rhino horn (Department of Environmental Affairs, 2015b). Due to the technical nature of the issues to be discussed by the Committee, a Technical Advisory Committee (TAC) has been established. The TAC, comprising the directors-general of the departments of the ministries represented in the Inter-Ministerial Committee (IMC), will facilitate the processes, and ensure that both

technical and strategic matters are adequately addressed before reports and/or recommendations are submitted to the IMC for consideration.

The 21-member committee would report to the IMC before the end of 2015. The committee comprises a cross-section of stakeholders from both the public and private sectors – leaders in their field who have been selected based on their extensive expertise. This includes representatives from law enforcement agencies, SANParks, the scientific community, the immigration service, the revenue service, the conservation industry, private wildlife owners and community organisations, as well as NGOs and traditional leadership.

The Committee has to investigate, evaluate, report, and make recommendations relating to a diverse set of key areas, *inter alia*:

- Incentivising the trade and possession of rhino as a live commodity, by developing an enhanced understanding of current forms of investment, drivers and incentives.
- Strategic, targeted, culturally sensitive demand management initiatives.
- If trade was to be an option, the potential models/mechanisms for trade, and criteria/conditions had to be established. Issues to be considered included models – strictly controlled trade, i.e. once-off sale of stockpiles; government-to-government trade or more open regulated trade; sources of specimens to be traded; the benefits and risks associated with the different options;

possible trade partners and the criteria to be met by these states; conditions; and, finally, the financial mechanisms.

- The response/change in the market; implications; and the mechanisms to respond to that change (demand and supply issues and the anticipated changes if trade is introduced, interventions enhanced or new interventions implemented, and the measures/interventions to manage or respond to these changes).
- The socio-economic impact and potential benefits to communities, farmers, conservation authorities and rhino and elephant conservation, including the economic opportunities for communities from wildlife management, and the risks posed by wildlife trafficking – e.g. infiltration of criminal elements in communities.
- The criticisms or concerns relating to trade, and the means to address them.
- Engagement strategies for the various role players involved, with a special focus on communities.

The first stakeholder meeting was held from 25 to 27 March 2015.

2.2.2 International legislation

In terms of section 38(1) of the Statute of the International Court of Justice, the sources of international law are the following:

- (a) International conventions (treaties)
- (b) International custom, as evidence of a general practice accepted as law
- (c) The general principles of law recognised by civilised nations
- (d) Judicial decisions

Treaties are usually seen as the primary source, while custom is the secondary source (Dugard, 2005:27). Treaties can be multilateral (binding many states) or bilateral (between two states only). Treaties do not become part of the law of the country, without legislative transformation.

According to Kidd (2008:43), there are three principal ways of doing this:

- (i) The treaty document as a whole is included in an Act of Parliament.
- (ii) The treaty may be included as a schedule to a statute.
- (iii) An Act may give the executive power to bring a treaty into effect in the law of the country, by means of a proclamation in the *Government Gazette*.

An international treaty or convention is not binding in South Africa until it has been enacted into the law of the country by one of the aforementioned means. If South Africa is a party to the treaty, it will be bound on the international plane.

Regulations in terms of the National Environmental Management: Biodiversity Act 10 of 2004, were published in the *Government Gazette* of 5 March 2010

(South Africa, 2010), whereby CITES regulations were finally incorporated into South African legislation.

The black rhino is listed under Appendix 1, and may therefore not be traded internationally, except under exceptional circumstances. However, during the 13th Conference of the Parties (CoP) held in March 2005, a resolution was passed through which South Africa obtained permission to hunt five black rhino bulls per annum for trophies, and that these trophies were to be exported to the hunters' countries of residence (Endangered Wildlife Trust, 2013a:2).

Since 1994, the white rhino has been listed under Appendix 2, with the following annotation:

For the exclusive purpose of allowing international trade in live animals to appropriate and acceptable destinations. All other specimens shall be deemed to be specimens included in Appendix 1 and the trade in them shall be regulated accordingly.

International trade may therefore take place, but only for the offtake of rhino through sport hunting by foreign nationals, and the export of live rhino to appropriate and acceptable destinations. All other rhinos are still listed in Appendix 1, which means that no international trade may take place. In other words, the commercial international sale of rhino horn is prohibited (Endangered Wildlife Trust, 2013a:2).

2.3 OWNERSHIP OF WILD ANIMALS

Economic use of wildlife may be for commercial, market-related, economic activities, or for subsistence purposes. In the modern world, there is considerable emphasis on the commercial aspect of economic activity (Tisdell, 2002:51). Consequently, if economic use is to provide an incentive for the conservation of wildlife or nature, those responsible for its conservation must be able to make a profit or economic gain from it. Whether they can do so will be determined by their property rights in wildlife.

Before 1991, all wildlife in South Africa was treated by law as *res nullius* or un-owned property. To reap the benefits of ownership from a wild animal, it had to be killed, captured or domesticated. This created an incentive to harvest, not protect, valuable wild species. Even if a game rancher paid for a rhino, the rancher could not claim compensation if the rhino left his property or was killed by a poacher (‘t Sas-Rolfes, 2011b:3).

The common law classification of wild animals as *res nullius* presents problems that are not adequately dealt with by legislation or judicial interpretation of South African law. The fact that wild animals are regarded as *res nullius* means that, save in the exceptional case where someone has acquired ownership of them, there are no private law remedies available to citizens when wild animals are killed, captured or injured. The common law crimes of theft and malicious damage to property are also not applicable. Consequently, wild animals would be without any legal protection if it were not for specific legislation for their conservation (Rabie, 1996:132).

A further consequence of the common law is that, in the absence of contractual arrangements concluded for the establishment and management of Transfrontier Parks (for instance), or the removal of fences between protected areas and private land providing otherwise, wild animals roaming out of protected areas, and across international boundaries or onto private land not actually, or deemed to be, owned by the State or any other person, become *res nullius* when they stray from the protected areas to private or foreign land. These animals fall outside the control of the State, will form part of the property rights of private landowners, or be subjected to the laws of the neighbouring countries, and would therefore be capable of falling within the ownership rights of neighbouring governments or neighbouring landowners, as the case may be. These animals will be at risk of being lost to the State (Hopkinson, Van Staden & Ridl, 2008:492).

When land that is formally protected and managed as a protected area, or as part of a protected area, under national or provincial conservation legislation, is awarded to private individuals or communities under the land restitution process currently under way in South Africa, and such land is de-proclaimed as protected area land, the wild animals occurring on such land, if not removed by the State prior to de-proclamation, will become *res nullius*. As such, they will form part of the private property rights of the new landowners and will be lost to the State (Hopkinson *et al.*, 2008:493).

It seems, therefore, that one of the foundations of South Africa's legal system, the common law, is not compatible with the South African Constitution, is rooted in socio-economic conditions of ancient Eurocentric culture that no longer has relevance in a modern South Africa, but, nevertheless, plays a

dominant role in the legal relationship between wild animals and society (Hopkinson *et al.*, 2008:530). None of the provincial ordinances or provincial legislation refers to the ownership of wild animals – which is accordingly left to the common law (Glazewski, 2005:377).

The common law principles regulating the acquisition and loss of ownership of wild animals on private game farms, were radically modified by the recommendations of the South African Law Commission, following its 1988 investigation into the acquisition and loss of the ownership of wild animals in South Africa. The investigation followed calls by various bodies and persons for more effective protection for game farmers. The Law Commission's recommendations provided the basis for the Game Theft Act 105 of 1991 (GTA), which came into operation on 5 July 1991 (South Africa, 1991). The Act regulates the ownership of a certain class of wild animal referred to as "game". Section 1 of the GTA defines "game" as all game kept or held for commercial or hunting purposes, including the meat, skin, carcass, or any portion of the carcass of the game.

It appears from section 2 of the GTA that the *rei vindicatio* and, in appropriate circumstances, also the action for trespass, may be instituted against a poacher who has entered land against the wishes of the landowner. The GTA further provides, in section 3, that any person who enters another person's land with the intent to steal game, or to dispose or lure away game from the land, is guilty of an offence, and in order to assist the prosecution, the accused, if caught, is presumed to have had the intention to commit these offences.

Section 7 of the GTA provides that a court, upon the conviction of a person for theft of game, or malicious damage to property where the property is game, must draw the attention of the complainant to the provisions of section 300 of the Criminal Procedure Act 51 of 1977 (CPA) (South Africa, 1977), in terms of which the court may award a sum of money to a complainant as compensation for any damage suffered by them as a result of the actions of the accused.

Magistrates' courts were originally powered to award higher compensatory fines, where game was involved, than the maximum limits laid down in section 300 of the CPA. It is submitted by Terblanche (1999:488) that the section 300 procedure is aimed mainly at two situations. The first is where most of the evidence which will be necessary to prove a civil claim, has been adduced in the course of a criminal trial, and a separate civil matter will mostly amount to a duplication. The second is where the injured party is indigent and naive, and is unlikely ever to actually institute a civil action. Beyond these two situations, it is submitted that the criminal court should leave the matter to a proper civil action.

According to Van der Merwe and Blackbeard (2003:346), reservations have been expressed with regard to the exact scope of the main provisions of the GTA. In addition to the fact that the game which escapes from an enclosed camp does not become *res nullius* again, the common law principles with regard to occupation have been changed in the following respects:

- (i) Firstly, in contrast to the rule of common law confirmed by the South African case law, that a hunter who has caught wild

animals in contravention of wildlife statutes still becomes the owner of his or her quarry, the GTA now allocates the ownership of such game to the person from whose land it was caught.

- (ii) Secondly, whereas formerly a hunter (poacher) who caught game on another person's land, without the latter's permission, would still become the owner of the game, subject to being sued for trespass under the GTA, ownership of the game is allocated to the owner of the land from where it was caught.

Economic use of wildlife, particularly commercial use of species, may be favourable to survival of wildlife, but need not be. This depends upon the nature of property rights and the economic profit that can be obtained from using a species commercially (Tisdell, 2002:55).

2.4 THE IMPORTANCE OF WILDLIFE CONSERVATION

2.4.1 Wildlife and environmental values

Legislation reflects human decision regarding what is acceptable for the society in which one lives. Attitudes to wildlife also reflect the culture and society of which one is a product. Fuggle and Rabie (2005:250) give the following example: Some people might view the death of the last disease-bearing tsetse fly with joy, while to others the same occurrence might evoke concern because it will pose a threat to wildlife from domestic stock colonising new areas. Yet both groups will probably fail to mourn the loss of another species of animal (the tsetse fly) to the world.

Wildlife conservation is, according to Bailey (1984:9), a social process encompassing both lay and professional activities that define and seek to attain “wise use” of wildlife resources, and maintain the productivities of wildlife habitats. Wildlife includes all free-ranging vertebrates in their naturally associated environments. Other definitions of wildlife are much broader, and may include all plants and animals in wild ecosystems (Bailey, 1984:5).

There are many opinions on what uses are wise, and these opinions change as national, state or local priorities are buffeted by surpluses and scarcities, and by crises such as unemployment, poverty and war.

An environmental crisis, such as species extinction, is one of the most important problems currently facing society. How society deals with this problem largely depends how the relationship with nature is perceived (nature in this sense includes environment as well as wildlife). Is nature viewed as property for society to use, or does nature have intrinsic value, value aside from its usefulness to humans?

Environmental ethics was given a central place in debate among scientists, regarding how people extend ethics to the natural environment. According to Kortenkamp and Moore (2001:261), environmental ethics is based on the idea that morality ought to be extended to include the relationship between humans and nature. The ethics discourse is not only related to the level of private decisions on environmental issues, as is the case in various lifestyle-orientated approaches about choices at the individual level. It also includes the broader realm of positions taken with regard to societally aggregated

decision-making. All decisions have ethical aspects, although the forms and degrees may differ (Svedin, 1998:299).

There are a number of ways to understand an extension of moral consideration to nature. For example, is the extension individualistic or holistic? In other words, are individual plants and animals given moral consideration, or is morality only extended to whole species or ecosystems? Another distinction is whether the extension is rights based or responsibility based. In other words, does nature have the right to be protected, or do humans simply have a responsibility to protect nature? Perhaps the most important distinction is whether the moral extension is anthropocentric or ecocentric, because this determines what the focus of the environmental ethic is – either humans or nature.

Anthropocentrism considers humans to be the most important form of life (Kortenkamp & Moore, 2001:262). Using this ethic, it would be considered wrong to kill all rhino because rhino horn contains potential cures for human diseases. Sometimes, the moral choices are difficult when an endangered species can supply a direct benefit to humanity. Few people would not utilise the last members of a species if the alternative was extinction, nor would most people shrink from sacrificing them for medical purposes.

In an ecocentric ethic, nature has moral consideration because it has intrinsic value – value aside from its usefulness to humans (Kortenkamp & Moore, 2001:262). Using this ethic, one could judge that it would be wrong to kill all rhinos because it would cause the extinction of the species. This is also referred to as the right of species to exist (Elredge, 2001:48). That animals

have intrinsic rights and should be protected against abuse, is a notion widespread in society.

The problems pertaining to conservation are not merely related to ethics or morality. Humans are part of nature, and are subject to the same unchanging ecological laws as are all other species on the planet. All species have a right to exist. The ecological processes that support the integrity of the biosphere and its many species, landscapes and habitats, are to be maintained.

The well-being of future generations is the social responsibility of the present generation. The present generation should therefore limit its consumption of non-renewable resources to the level that is necessary to meet the basic needs of society.

Variety in ethical and cultural outlooks towards nature and human life is to be encouraged by promoting relationships that respect and enhance the diversity of life, irrespective of the political, economic or religious ideology dominant in society. This means that sustainable living practices and sustainable utilisation of natural resources should be a binding global ethic and responsibility. Sustainable use will be discussed in more detail in section 2.7.

2.4.2 Why should species be saved?

Most sensitive human beings will care about, and mourn, the loss of a species. However, only relatively few will realise that the upcoming disappearance of a prominent endangered species is not merely a single tragedy, but symptomatic of a planetary catastrophe that is bearing down on society (Ehrlich & Ehrlich, 1982:6).

Within a given habitat, all wildlife have individual specific living requirements, yet all wildlife is interdependent on, and acting with, its physical and living environment. The addition or removal of a single species from that habitat may create reactions. The evaluation of these reactions according to either "harmful" or "beneficial", is a human concept, and only applicable if the changes are human induced. Species extinction is a natural part of the evolutionary process. Due to human activities, however, species and ecosystems are more threatened today than ever before in recorded history.

According to Moulton and Sanderson (1999:168), five major extinctions occurred in the past: the Ordovician, 440 million years ago, the Devonian, 365 million years ago, the Permian, 250 million years ago, the Triassic, 210 million years ago, and the Cretaceous, 65 million years ago.

The earth is currently faced with a mounting loss of species that threatens to rival the five mass extinctions of the geological past. The previous mass extinctions were due to natural causes. According to Elredge (2001), the sixth extinction is patently a human-caused event, and can be divided into two phases. Phase one began when the first modern humans began to disperse to different parts of the world about 100,000 years ago. Phase two began about 10,000 years ago with the invention of agriculture. Agriculture represents the most profound ecological change in the entire 3,5 billion year history of life. With this invention, humans did not have to (a) interact with other species for survival, and so could manipulate other species for their own use; and (b) adhere to the ecosystem's carrying capacity, and could overpopulate in the process.

According to Ehrlich and Ehrlich (1982:6), there are three prime arguments for the preservation of species:

- (a) The first is that simple compassion demands their preservation. This argument is based on the notion that other products of evolution also have a right to existence, and that the needs and desires of human beings are not the only basis for ethical decisions.
- (b) The second is that other species should be preserved because of their beauty, symbolic value or intrinsic interest – the argument from an aesthetics point of view.
- (c) The third is basically economic: other species provide direct benefit to *Homo sapiens*, and should be preserved for that reason.

The past hundred years have seen an unprecedented level of species disappearance across the globe, including 90 mammals and 17 birds – not due to climate change, earthquakes, tsunamis or meteorites, but by the hand of man (Walker & Walker, 2012:37).

Africa is often said to have escaped the massive extinctions experienced by North America, Europe and other parts of the world, and to have a “pre-Pleistocene fauna”. It did, however, suffer losses. The African plains game presently contains only about 60% of the genera of large mammals encountered in Africa.

Before the turn of the nineteenth century, South Africa witnessed the extinction of several species of mammals. The most famous was the quagga, *Equus quagga quagga*. The so-called Cape lion, *Panthera leo melanochaitus*, a subspecies, became extinct in the Cape around 1858 – and also in Zululand in 1865. The blue buck, *Hippotragus leucophaeus*, is believed not to have survived beyond 1800. Since then, both species of rhino, the bontebok, *Damaliscus dorcas*, and the Cape mountain zebra, *Equus zebra zebra*, have nearly been added to the list (Walker & Walker, 2012:41-42).

2.5 POACHING IN SOUTH AFRICA

'Poaching' is defined as follows in the *Cambridge Advanced Learner's Dictionary* (2013): "To catch and kill animals without permission on someone else's land". According to Duffy (2010:83), poaching, at its most basic, is the illegal hunting of any animal, whether banned by the State or by private owners of wildlife.

Poaching can be divided into two main categories:

- Subsistence poaching, whereby local people take small numbers of animals for food. Subsistence poaching is used only to meet the food needs of local communities, and is usually a continuation of the historical practice of using certain types of wildlife for food.
- Commercial poaching, where organised crime units take large numbers of animals for monetary gain. Commercial poaching is often presented as a tale of ignorance, greed, mass killing of

wildlife, and linkages to the international illegal trade (Duffy, 2010:87).

The focus of this research is on commercial poaching.

The word 'poaching' is generally used to include a number of criminal offences – for instance, illegal hunting, sale and purchase of game, catching of game under certain circumstances, and the poisoning of game. The word 'poaching' will not even appear on the charge sheet in a criminal case.

Traditionally, nature conservation and hunting (including illegal hunting) has been effected by virtue of the Orange Free State Nature Conservation Ordinance 8 of 1969 (South Africa, 1969), the Natal Nature Conservation Ordinance 15 of 1974 (South Africa, 1974a), the Cape Nature and Environmental Conservation Ordinance 19 of 1974 (South Africa, 1974b) and the Transvaal Nature Conservation Ordinance 12 of 1983 (South Africa, 1983).

Besides the ordinances, several of the former black states enacted their own nature conservation legislation. It has already been stated that the Constitution determines that nature conservation falls within the legislative competence of the provinces. Although in some of the new provinces (Mpumalanga, KwaZulu-Natal and Limpopo) new provincial legislation has been enacted, the relevant provincial ordinances are still in force in some of the other provinces.

Mpumalanga passed the Mpumalanga Nature Conservation Act 10 of 1998 (South Africa, 1998b), which is a refinement of the previously applicable

Transvaal ordinance. The nature conservation legislation in the former homelands of Bophuthatswana and KaNgwane has also been repealed by this Act.

The position in Limpopo was particularly complex, because of the need to consolidate the laws and institutions of four previous homelands which existed in the area, namely Lebowa, Venda, Gazankulu and KaNgwane, as well as the Transvaal Ordinance. This was done in the form of the Limpopo Environmental Management Act 7 of 2003 (South Africa, 2003), which replaces the previous legislation.

Provincial legislation (ordinances) is applicable if an offence is committed on private land or a provincial nature reserve. Should an offence be committed in one of the national parks, the perpetrator will be charged in terms of section 57(1) of NEMBA.

The perpetrator can also be charged in terms of the Trespass Act 6 of 1959 (South Africa, 1959), the Firearms Control Act 60 of 2000 (South Africa, 2000), the Dangerous Weapons Act 71 of 1968 (South Africa, 1968), the Animal Protection Act 71 of 1962 (South Africa, 1962) and the Riotous Assemblies Act 17 of 1956 (South Africa, 1956).

2.5.1 Why did poaching in South Africa increase after 2008?

Taylor *et al.* (2014:55) mention four reasons why South Africa did not experience increased poaching before 2008:

- Firstly, South Africa did not have large rhino populations before 1980, rendering it unattractive as a potential rhino poaching country

simply because rhinos were rare. However, as rhino numbers outside South Africa dropped below 10,000 during the 1980s, they would have become increasingly hard to locate, while the growing rhino population in South Africa would have made rhinos easier to find. South Africa had a structured conservation programme that was well funded from ecotourism revenues and government funds, and this, together with a strong history of military and conservation expertise, resulted in anti-poaching deterrents that were more effective here, than anywhere else in Africa.

- Secondly, key consumer markets in Asia, including China and Taiwan, took measures in the 1990s to restrict domestic sales in rhino horn medicines, because the United States (U.S.) threatened to apply sanctions.
- Thirdly, there is the possibility that consumer nations in Asia, particularly China, had large stockpiles of rhino horn throughout the 1990s, and may have been able to meet their needs without obtaining new horns.

In 2007, TOPS regulations under NEMBA (South Africa, 2004a) placed stricter provisions on hunting threatened or protected species in South Africa. The poaching surge started in 2008. In 2009, the norms and standards for trophy hunting were implemented, placing restrictions on trophy hunting, and making it harder to obtain horns from pseudo-hunts, hence 2010 witnessed another spike in poaching – as shown in Figure 2.1:

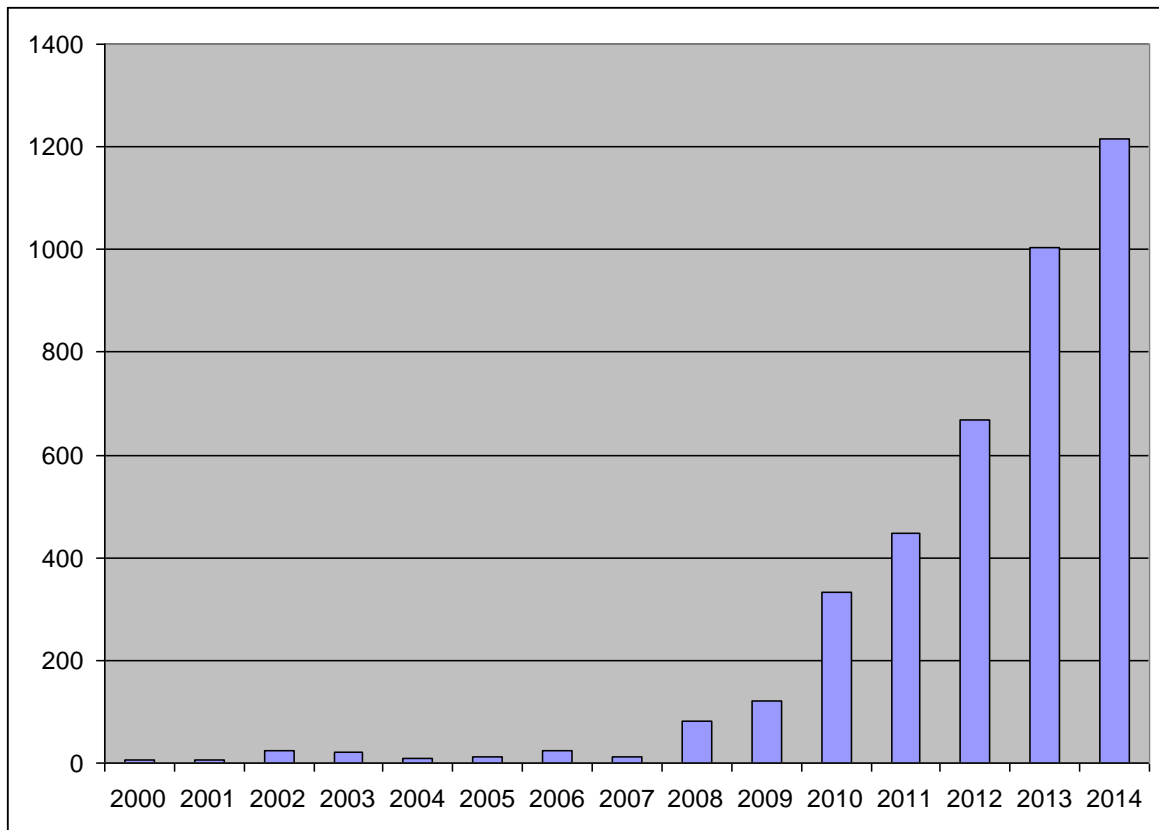


Figure 2.1: Rhino poaching statistics: South Africa. **Source:** Department of Environmental Affairs, 2015a:n.p.

The aforementioned were not the only reasons for the increase in poaching: the increase in demand also played a role.

2.5.2 The poacher

According to Terblanche (1999:172), people commit crime because that element which inhibits other people to commit crime, is absent in the offender at the moment when the crime is committed. There can be many reasons for the absence of this element; it often happens because the offender's inhibitions are diminished through poverty.

Organised crime is a different matter altogether. People heading such organisations or collections of people are motivated by greed alone, and operate seemingly without conscience. Not all people involved in organised crime fall into this category, however. The small cog in such an organisation's wheels, who are involved only to a limited extent, in order to earn some livelihood, are not necessarily of the same disposition.

The initiatives of the legislature in the Prevention of Organised Crime Act 121 of 1998 (South Africa, 1998c) and the Proceeds of Crime Act 76 of 1996 (South Africa, 1996b) should be welcomed in principle. People involved in organised crime deserve different treatment from that of occasional criminals. However, it is important that the correct people be targeted (Terblanche, 1999:173).

According to a report by the secretariat of CITES (CITES, 2013:5), there are five layers to poaching:

- Level 1: Poaching individual/groups
- Level 2: Local: receivers/couriers
- Level 3: National: couriers/buyers/facilitators
- Level 4: National: exporter
- Level 5: International: consumer/receiver/buyer

At the first level there are several types of poacher. There is the traditional poacher who lives nearby, has excellent bush skills, and often has military training. According to Eloff (2012:57), the race profile of 55 perpetrators who were arrested in the Kruger National Park (KNP) were 96% black and 4%

white, and all were male. The group was a combination of 40% Mozambican and 60% South African citizens. The age profile percentages were 41% (20-29 years), 41% (30-39 years) and 18% (40 years and older). The age sample was taken from 22 perpetrators. At the same level there are wildlife industry poachers: park rangers, veterinarians, pilots, game capture operators, pseudo-hunters, game farm managers and owners. The horn is worth more than the rhino, making it worthwhile to hunt (illegally) one's own rhinos.

According to a report compiled by the U.S. Department of State (Fenio, 2014:12), it may be appropriate to include a Sub-level 1. This level would include those community members who are not directly involved in poaching itself, but provide others with assistance of some sort.

Investigation complexity differs significantly between Level 1 and Level 5. According to the CITES report (CITES, 2013:5), current enforcement activities in rhinoceros range states address criminal syndicate members from levels 1 to 3 relatively effectively. These individuals are often easily replaced, and the threat to rhinos will continue to exist for as long as enforcement activities do not address the driving force behind these individuals (levels 4 to 5).

Between 1 January 2012 and 16 October 2012, South African authorities arrested a total of 207 offenders involved in illegal trade in rhinoceros horn. Table 2.1 reflects the different levels of criminal activity with which these suspects were associated. Organised crime syndicate members on levels 4 and 5 are often located in consumer countries, beyond the reach of enforcement authorities in range countries.

Table 2.1: Arrests in South Africa from 1 January 2012 to 16 October 2012 at each level of the criminal chain.

Levels in the criminal chain	Number of suspects arrests
Level 1 (Poachers)	179
Level 2 (Receivers/couriers)	10
Level 3 (Couriers/buyers/facilitators)	18
Level 4 (Exporters)	0
Level 5 (Consumers/Receivers/Buyers)	0
	Total: 207

Source: CITES, 2013:5.

Historically, African wildlife poachers were recruited from local communities living in close proximity to protected areas, some of which were disputed as former communal land areas where subsistence hunting had often occurred until recently. Overlapping with this, another typical poacher profile concerns former military personnel, police officers or game scouts, all of whom would have had specialised training to develop tracking or shooting skills (Milliken & Shaw, 2012:74). The involvement of game rangers in poaching gives cause for concern. It represents abuse of an official position, and should be regarded as an aggravating factor.

The following are examples of how South African courts have dealt with similar situations in the past: In *S v Small* 1983 2 PH H34 (O) the Court of Appeal confirmed a sentence of 18 months' imprisonment on a prison warder who assisted prisoners in escape. According to the court, the warder's crime amounted to an act of treason against the service of which he was a member.

In *S v Ndlovu* 1983 2 PH H172 (A) it was held that the fact that an employee provided information to prospective thieves or robbers, which induced or facilitated the commission of the crime, constituted an aggravating factor.

A new kind of poacher has also become an integral part of the equation, especially in game ranch areas in the provinces: the game industry insider. The use of modern heavy-calibre rifles, dart guns, immobiliser drugs and helicopters, clearly represents a completely “new face” in terms of rhino poaching (Milliken & Shaw, 2012:75).

African nationals charged with rhino crimes in South Africa were predominantly South African and Mozambican citizens, although some Zimbabweans and a small number of Congolese citizens have also been charged. Asian nationals charged with rhino crimes in South Africa have been predominantly Vietnamese, though mainland and overseas Chinese, Malaysian and Thai citizens have also been involved. Those of African origin arrested were typically involved in levels 1 and 2 activities. Some South African nationals have also been arrested at level 3 for activities at a national level, relating to the illegal possession of, and trading in, rhino horn. Asian nationals have mostly been charged with illegal purchase, possession and trading in rhino horn, predominantly filling the Level 3 or Level 4 courier or exporter role in the trade chain (Milliken & Shaw, 2012:96).

Eloff (2012:60) has identified two theories pertaining to poaching: the Rational Choice Theory and the Routine Activity Theory.

The Rational Choice Theory applies in describing the more organised criminal. The theory argues as follows:

- What is the risk? (adding corruption and low conviction rate and challenging juridical system = fairly low risk)
- Personal injury versus reward (a perpetrator can be shot by a law enforcement official)
- Arrest or imprisonment (receiving a five-year sentence, but only serving one year, is not a real deterring factor).

The Routine Activity Theory applies more to the impulsive runner on the ground – the actual poacher. For this theory, 'routine activity' means any commonly occurring social activity that provides for basic needs when social disorganisation occurs. Three factors come into play when analysing rhino poaching as per the Routine Activity Theory:

- The motivated offender who is hungry and poor, and who is presented with an opportunity to make some money
- A suitable target being available
- The absence of a capable guardian, in the form of poor border patrols, low conviction rates, and rhino as free walking wildlife.

The research by Fenio (2014) highlights that different poaching mentalities appear to exist:

One person may poach out of ignorance about conservation, or because he feels he has no other choice (even if he deems it morally wrong), because he is in a dire situation and must accommodate his family. Another may do so because of peer

pressure, or because he has been threatened to join because of his tracking skills, or perhaps he did it once and then became "sucked in". Others may poach because they experience a sense of fulfillment, a life purpose, from being able to provide in an otherwise impoverished region, while still others may enjoy the thrill (and money) that comes from risky behaviour. And finally, there are those who have received the taste of the financial payoffs and simply do not want to stop. These mentalities can also certainly overlap, depending on the person.

2.5.3. Mozambique's role in rhino poaching

The majority of rhinos killed in South Africa are poached in the KNP, which shares a long border of 360 km with Mozambique – where most of the poachers come from. Poachers from Mozambique are able to illegally slip across the border into the KNP, and even if the KNP rangers are able to detect them, they are unable to carry out a "hot pursuit" once the poachers have crossed the border back into Mozambique.

Two decades of civil conflict left Mozambique's conservation ethics in chaos. Rhinos became extinct in Mozambique for the second time. Despite impressive growth statistics, the country remains mired in poverty, and there are many individuals willing to risk their lives to earn money through poaching.

A number of steps have been taken in order to solve the poaching problem on the eastern boundary of the KNP, but to no avail. South Africa signed an agreement with Mozambique on 17 April 2014, in terms of which the two countries would work together in order to fight poaching. Mozambique has set

up a foundation to work with the South African government to establish a special anti-poaching force to help develop commercial projects whereby local residents can benefit from conservation work. Poaching was previously regarded as a misdemeanour with no strict penalties, but was reclassified in 2012 as a crime. In April 2014, a law was passed in order to impose heavy penalties of up to 12 years' imprisonment on anyone convicted of poaching. An elite, highly trained National Anti-Poaching Unit has been formed. The Mozambican government has passed a decree creating a flexible, state-owned agency similar to that of SANParks (SANParks, 2012).

According to Michler (2012), villages within the province of Gaza have become havens for poachers. Using the villages as a base, the poachers make their way into the KNP. Even if arrests are made, a whole set of new challenges presents itself, as anyone, from anti-poaching rangers through to police and prison officials to prosecutors, may be corruptible. The first move made by whoever is apprehended, is to offer money – the amount depending on who has been caught and by whom. For the Mozambican government, the most worrying aspect is the involvement of the defence and security forces in poaching incidents.

In a study conducted in 2012 (Eloff, 2012:59), many illegal crossing points between the KNP and Mozambique were identified. A specific point has been monitored since 2006. No activity was identified for the years 2006, 2007 or 2008; however, in 2009 and 2010, illegal cross-border activity was observed. This area was near a cluster of rhino poaching incidents.

South Africa has committed R24.9 million from the R252 million Swedish and Dutch Postcode Lottery donations secured by the Peace Parks Foundation, to Mozambique, to aid anti-poaching efforts. This will assist with the implementation of counter-trafficking measures, improvement of communication networks, training and capacity building of field rangers, provision of vital operational equipment, deployment of sniffer dogs, and community awareness projects (SANParks, 2014a).

According to Thomson (2006:77), the general poverty of Africa's rural people is the most important missing ingredient in every argument that purports to pinpoint the cause of poaching. Poverty pulls human communities down to the basic physiological level of Maslow's hierarchy of human needs scale, and it forces people to do anything in order to survive. This is a long-term solution; hence, another strategy to deter people from these communities to rely on poaching, will have to be devised. They will rely on poaching as long as there is a demand for illegal rhino horn.

2.5.3.1 Hot pursuit

At present, law enforcement officers (rangers and police) do not have the power to chase poachers across the Mozambique border, following the killing of rhinos in the adjacent KNP. Once a poacher has crossed the border, he has effectively escaped.

Although the National Police Commissioner (SAPS) has confirmed that hot pursuit has been added to the arsenal available to South African law enforcement for use against poachers (Helfrich, 2014), there seems to be no clarity on this statement. It appears to be a "gentleman's agreement" – a kind

of verbal agreement among members of the South African Development Community (SADC) that when suspects cross borders, contact first has to be made with law enforcement across the border to obtain an escort to conduct their pursuit or investigation. There have been calls for formalisation of this process, and it has apparently been escalated to a SADC subcommittee. Such a formal agreement will outline the protocols.

According to Bean (2015), there is legal precedent to justify a move into Mozambique, namely –

- (a) "The sovereign rights of the RSA under international law allows the RSA to exercise "proportional force" across borders and inside Mozambique in order to prevent:
 - i) the wholesale massacre of South Africa's endangered species within South Africa by criminals based inside Mozambique; and
 - ii) to prevent the incursion into the RSA of armed personnel who are willing to kill any South African citizen who tries to stop their poaching activities."

2.6. EFFECTIVENESS OF CERTAIN STRATEGIES TO PREVENT/STOP POACHING

Controlling the illegal supply of rhino horn through anti-poaching measures is a very expensive strategy, and its long-term effectiveness is threatened by declining budgets.

2.6.1 DNA profiling

Rhino horn consists mostly of keratin, calcium and melanin, and grows continuously. The horn includes cells which contain nuclear DNA, allowing the identification of individuals and matching of horns and carcasses through DNA analysis (Lindsay & Taylor, 2011:9).

The Rhino DNA Index System (RhODIS) is a project that was instituted by the Veterinary Genetics Laboratory at the University of Pretoria, in order to help with the plight of the rhinos. The laboratory is collecting DNA samples of rhinos across the country, in order to create a database using the unique DNA profile of individual rhinos. The goal is for all rhinos to be on the system, with the aim of deterring poachers and assisting in forensic prosecutions (*Rhino DNA Index System*, 2014).

The South African DEA introduced amendments to the norms and standards for sample collection and identification of live and poached rhinos, under NEMBA – which requires that samples be collected from all poached rhinos, and from other rhinos that are immobilised, which have to be submitted to the laboratory for inclusion on the RhODIS database.

DNA profiling enables law enforcement agencies to combat poaching by scientifically linking evidence such as rhino horn and equipment used in the removal of horn, to specific poaching events, in order to ensure greater success in identifying and convicting the criminals responsible.

2.6.2 Dehorning

Rhino horn is potentially a renewable/sustainable resource. It can be painlessly removed, and regrows at a rate of 25mm to 66mm per year, with a mean of 50,5mm. The anterior horn of young adult (8-25 years) white and black rhinos exhibits an intrinsic growth rate of 59,8mm per year (Pienaar, Hall-Martin & Hitchins, 1991:104).

Rhino dehorning has been used historically as a tool to reduce the threat of poaching in parts of Southern Africa. The main aim of dehorning is to reduce the potential profit to poachers, and thus greatly reduce their incentive to kill rhino (Emslie & Brooks, 1999:67). Dehorning is contentious, due to uncertainty regarding the effectiveness of the method at reducing poaching, and due to potential veterinary impacts and adverse effects on the behavioural ecology of rhinos. A recent study by Lindsay and Taylor (2011) found that dehorning was not necessarily a disincentive to poach.

According to Du Toit (2011:13), poaching pressure on a particular population is likely to be a function of the following equation:

$$\text{Poaching pressure} = \frac{\text{Reward to poacher (illegal sale of horn)}}{\text{Risk to poacher (of being arrested or killed)}}$$

Dehorning reduces the amount of horn that the poacher can obtain by killing a rhino, and, thereby, the payment that he receives from the sale of the horn. Strong anti-poaching efforts to maintain risk to the poacher are essential,

since, if the risk he faces is low, he will accept a low reward; therefore, he will still poach dehorned rhinos.

Data from the Lowveld conservancies in Zimbabwe (Table 2.2) indicates that the mortality rate is indeed lower among dehorned than among horned rhinos.

Table 2.2: Relative losses of horned versus dehorned rhinos to poaching in the Zimbabwe Lowveld conservancies:

	2007	2008	2009	2010
Number of horned rhinos	322	269	269	303
Number of dehorned rhinos	72	105	72	57
Horned rhinos lost to poaching	24	51	62	13
Dehorned rhinos lost to poaching	3	19	3	3
% of horned rhinos poached	7.5%	18.9%	23.0%	4.3%
% of dehorned rhinos poached	4.2%	18.1%	4.2%	5.3%

Source: Lindsay & Taylor, 2011:20.

According to Du Toit (2011:15), if a rhino owner is dehorning without understanding the threat, he will dehorn in the false hope of stopping poaching, whereas if the rhino owner is dehorning to put off poachers in the immediate future, then it is a management tool which might buy some time and resources to effectively protect the rhino.

Milner-Gulland, Beddington and Leader-Williams (1992) considered whether dehorning acts as a suitable deterrent to poachers. Using a model of optimal harvest frequency, they concluded that a profit-maximising manager will not dehorn rhinos frequently enough to deter poaching.

For some smaller populations in vulnerable areas, dehorning is an option that can be considered, provided law enforcement is always a critical part of any protection strategy. Dehorning on its own, without law enforcement, does not work (Duffy, Emslie & Knight, 2013:17).

2.6.3 Poison (horn treatment)

In an attempt to curb poaching, some rhino owners pressure-inject rhino horns with poison and dye, designed to indicate that the horn is contaminated and that it will make the end-user seriously ill.

This method entails the treatment of the rhino horn while the animal is under sedation, infusing it with an indelible dye that contaminates the horn. The dye is mixed with a compound of ectoparasiticides which serve to protect the rhino from ticks and other parasites that spread infection. The compound is toxic to humans but safe for animals. A full DNA sample is also harvested from the rhino, and three matching identification microchips are inserted – one per horn, and a third on the animal (*Rhino Rescue Project*, 2014).

Ethical and practical concerns have been raised that innocent people could be poisoned after unwittingly ingesting affected horn, and that black market dealers will find ways to disguise the dye (e.g. by bleaching the horns) or simply cut out the affected parts of the horn.

The effectiveness of such treatments has not been satisfactorily demonstrated. Instead, according to Duffy *et al.* (2013:17), evidence, to date, from a number of recovered treated horns that have been sectioned, shows that the dye (and presumably also the poison) has failed to penetrate the treated horns, suggesting that this treatment is ineffective. According to Ferreira (2014:113), investigators dissected treated horns, and discovered that the pink dye concoction was nowhere to be seen.

Should a person die because of ingesting affected horn, and the horn be traced back to a specific rhino belonging to a specific owner, the owner could probably face criminal charges. Murder, for instance, is the unlawful and intentional causing of the death of another human being. The elements of the crime are therefore (a) causing the death (b) of another person (c) unlawfully and (d) intentionally.

The requirements mentioned in (a), (b) and (c) speak for themselves, and need no further discussion. Of special importance is the requirement of intention. This requirement is satisfied not only if X has direct intention (*dolus directus*) to kill Y, but also if he merely foresees the possibility of Y being killed, and reconciles himself to this possibility (*dolus eventualis*) (Snyman, 2002:423). The following example can be used to illustrate the aforementioned: X, a rhino owner, wants to deter poachers by poisoning his rhino's horn. He foresees the possibility that somebody might be killed when ingesting the horn. He proceeds with poisoning the horn, indifferent as to whether somebody will be killed or not. If it happens, in the eyes of the law X has the intention to kill somebody.

2.6.4 Translocation

Translocation entails the relocating of rhino, to create rhino strongholds in other areas, in order to ensure that the broader population continues to grow. The purpose is to translocate rhinos into manageable areas where patrol efforts can be concentrated and where poachers run a high risk of detection and/or capture (Emslie & Brooks, 1999:33).

SANParks has begun with the relocation and auction of a limited number of white rhinos from the KNP (SANParks, 2014b). The aim is to restimulate growth in large protected areas, while creating new rhino strongholds. In this way, SANParks will be able to offset the effects of poaching in the short- and medium-term, while expanding rhino range and improving the overall population size.

It will also include the relocation of rhinos from high-risk zones to zones of lower risk in the KNP, as well as to other national parks. It is clear from regular surveys that rhinos are found in different densities across the KNP. Poaching pressure is also uneven across the KNP landscape. Some areas are relatively free of recorded poaching incidents, while others are hard hit by poachers (SANParks, 2014b). Increasing births and decreasing death rates, through a relocation exercise, could stimulate growth in large protected areas, and maximise growth in rhino strongholds.

In the last quarter of 2014, 56 rhino were moved out of poaching hotspots, and translocated from certain areas within the KNP to an Intensive Protection Zone (IPZ), as well as to other more secure areas. In addition, approximately 100 rhino were translocated to neighbouring states during 2014, through both

private partnerships and government initiatives (Department of Environmental Affairs, 2015a).

An organisation titled, “Groupelephant.com,-ERP”, is sourcing rhino in South Africa for export to Texas, where they believe the rhinos will be safer than anywhere else in Africa, and where it will be much cheaper to secure the well-being of the rhinos (Van Hoven, 2015).

2.6.5 Law enforcement

Effective law enforcement responses to rhino-related crimes are, according to Milledge (2007:100), important for two main reasons. Firstly, they help to reduce to a minimum the quantity of rhino horn flowing onto the illegal market. Secondly, effective enforcement is important in reducing the impact of illegal activity on rhino populations.

Successful arrest is the first, and perhaps the most critical, step in the judicial process. The high rate of successful arrests in 2012 was, according to Milliken and Shaw (2012:95), attributable to increased intelligence activities, as well as better communication and collaboration between different government departments, as well as an indication that networks developed between law enforcement bodies are starting to show results.

South Africa’s focus has, in the past, been largely on reactive strategies. It would be more constructive if poachers could be halted before they come anywhere near rhinos. This will only come about through an increased focus on improved intelligence collection, its analysis, and the resultant implementation of strategically focused activities (Department of

Environmental Affairs, 2013:17). South Africa's management plan for black rhino also points to the critical importance of better intelligence systems to prevent poaching, rather than relying on prosecutions after a rhino has been killed (Department of Environmental Affairs, 2013:20).

The use of specialist wildlife investigators and prosecutors can help to ensure that criminals are tracked down, arrested, charged, and successfully prosecuted. The use of expert witnesses to convince the court of the seriousness of the crime committed can also contribute towards the appropriate sentencing of offenders. According to Emslie and Brooks (1999:69), in a number of South African cases where expert witnesses appeared for the prosecution, sentences of those convicted were significantly increased, and a precedent was set of high sentences for rhino crimes.

The use of DNA forensics in cases of illegal trade in rhino horn has already proved to be effective. DNA evidence has been used successfully in a number of rhino-related cases in South Africa.

The National Prosecuting Authority (NPA) of South Africa is a key partner in the criminal justice system, playing a critical role in ensuring that perpetrators of rhino crimes are charged and held responsible for their criminal actions (Milliken & Shaw, 2012:92).

Unless the sentences passed reflect the seriousness of rhino crimes, penalties are unlikely to act as a deterrent. Once a precedent for effective sentencing is set, it becomes easier to obtain more substantial sentences when required. A jail sentence is more of a deterrent than a fine. In *S v Zinn* 1969 2 SA 537 (A) it was stated by Rumpff JA that, when imposing a

sentence, “*what has to be considered is the triad consisting of the crime, the offender and the interests of society*”. By 'crime' is meant, especially, the consideration that the degree of harm, or the seriousness of the violation, must be taken into account (retributive theory). By 'criminal' is meant, especially, that the personal circumstances of the offender – for example, the personal reasons which drove him to the crime, as well as his prospects of one day becoming a law-abiding member of society again, must be taken into account (reformative theory). By 'the interests of society' is meant either that society must be protected from a dangerous criminal (preventive theory), or that the community must be deterred from crime (theory of general deterrence), or that the righteous indignation of society at the contravention of the law must find some expression (retributive theory) (Snyman, 2002:23).

In *S v Khumalo and others* 1984 3 SA 327 (A) Nicholas JA referred to the case of *R v Swanepoel* 1945 AD 444, and confirmed that in the assessment of an appropriate sentence, regard must be had, *inter alia*, for the main purposes of punishment – namely, to be deterrent, preventive, reformative and retributive. According to the court, deterrence has been described as the “essential”, “all important”, “paramount” and “universally admitted” object of punishment.

This issue was also addressed by Nicholson A in *S v Ngcongco* 1996 1 ALL SA 403 (N) where the court confirmed that there are three factors to be considered when determining a proper sentence: the accused, the crime and the interests of the community. The objects of punishment must also be considered, namely deterrence, prevention, reformation and retribution. According to Rabie and Strauss (1985:21), retribution should not be confused

with revenge. The basic difference between the two is that while revenge knows no balance between the injury done by the person taking revenge and the injury occasioned to him, retribution implies that punishment be proportional to the gravity of the crime.

There has been a great public outcry against rhino poaching, and, in the eyes of the general public, the courts should bear this in mind when deciding on an appropriate sentence. However, as was stated by Harms JA in *S v Mhlakaza* 1997n1 SACR 515 (SCA):

The object of sentencing is not to satisfy public opinion but to serve the public interest. A sentencing policy that caters predominantly or exclusively for public opinion is inherently flawed. It remains the court's duty to impose fearlessly an appropriate and fair sentence even if the sentence does not satisfy the public.

According to Terblanche (1999:176), if future crime can be prevented by a sentence, whether by deterring the accused or other potential offenders, by reforming the offender, or by protecting society from the offender by other means, such a sentence will be in the interests of society. Terblanche (1999:179) then continues by referring to two forms of deterrence. The first is known as general deterrence, which operates against society as a whole. The second form is known as individual deterrence, which operates against the offender. In terms of general deterrence, the sentence is used as an example to other potential offenders. The belief is that the threat of similar punishment will cause such potential offenders to refrain from committing crime.

According to Rabie and Strauss (1985:37), it has frequently been stated that the success of general deterrence is more dependent upon the relative degree of certainty that punishment will follow the commission of a crime, than upon the severity of the penalty. In other words, general deterrence is more a function of law enforcement than it is of sentencing. In *S v Nkambule* 1993 1 SACR 136 (A) the court referred to the fact that criminologists have found that certainty of punishment, rather than its severity, is the main deterrent.

According to Emslie and Brooks (1999:68), a problem in many court cases is that the fines are set in local currencies that devalue rapidly against hard currencies. Rhino horn is sold for hard currencies. Over time, a poacher may make more money by selling the horn and paying the fine, and will be undeterred by the penalties. The level of poaching will be determined by the prices paid for rhino horn on the one hand, and the effectiveness of the criminal justice system (risk) on the other hand. Poachers work out the ratio of risk/reward, taking into account aspects such as risk of detection, risk of prosecution – even risk of death and injury, balanced out against the financial reward for rhino horn. It is assumed that increasing the risks, when compared with rewards, will reduce poaching overall (Duffy *et al.*, 2013:16). According to Du Toit (2013), an increase in jail sentences and financial penalties reduced opportunist poaching in Zimbabwe's Lowveld, but a hard core of professional, well-equipped commercial poachers remained.

In South Africa, the number of rhino-related arrests and convictions with deterrent custodial sentences without the option of a fine, has increased. In a number of cases, criminals involved in rhino poaching and illegal rhino horn

trade have been sentenced to between six and 12 years' imprisonment, and in two further cases the offenders were sentenced to 25 and 29 years' imprisonment, respectively (CITES, 2013:6).

The National Wildlife Crime Reaction Unit (NWCRU) was established in 2010, and consists of representatives from the South African Police Service (SAPS), SANParks, national and provincial nature conservation officials, the NPA, the Asset Forfeiture Unit and Interpol.

NWCRU has dramatically sealed up South Africa's national response to rhino poaching and illegal trade in rhino horn. Since its creation, a series of high-profile law enforcement actions have occurred, which appear to have been collaborative efforts involving a range of authorities (Milliken & Shaw, 2012:90).

The Directorate of Priority Crime Investigations (DPCI) known as the Hawks, is a specialised division of the SAPS, established primarily to prevent, combat and investigate national priority offences. As rhino poaching and the illegal rhino horn trade have been identified as a serious national threat, these crimes are the responsibility of the Endangered Species Section within the Organised Crime Unit (Milliken & Shaw, 2012:90).

The official investigation at the crime scene can only be conducted by a police official or an Environmental Management Inspector (EMI) and in accordance with standard operating procedures. It often happens that evidence is contaminated, which results in an unsuccessful outcome in subsequent criminal proceedings.

While it is clear that rhino poaching has increased, so too have the focus and activities of the South African security forces in their attempts to protect the rhino. Even so, poaching levels are rising. On the other hand, it can only be speculated what the level of poaching would have been if additional measures had not been deployed.

No method to prevent rhino poaching can be effective on its own. Law enforcement goes hand-in-hand with all other methods or strategies. However, despite efforts to prevent pseudo-hunting, the CITES ban on legal rhino horn trade, increased law enforcement, increasing arrests, and a good conviction rate with significant sentences handed down, the illegal killing of rhino has increased. The South African government will have to consider an alternative strategy.

Corruption and high-level patronage have resulted in some poachers and dealers escaping the full force of the law, despite impressive national legislation prohibiting poaching and dealing in rhino horn (Emslie & Brooks, 1999:34). Also, where there is regional insecurity, poverty and/or weak systems of penalties and prosecutions for poachers, the risks associated with poaching are much lower (Milliken & Shaw, 2012:85).

Anti-poaching patrols, dehorning and horn poisoning are all expensive, and the costs are ongoing. However, according to 't Sas-Rolfes (2012:12), these measures are likely to yield greater success than law enforcement measures that target subsequent levels in the illegal supply chain. Such efforts are time consuming, and unlikely to ever cause more than temporary market disruptions. Measures such as increasing penalties (fines and prison

sentences) may also not be an effective deterrent, as judges and magistrates demand better evidence to successfully prosecute more serious cases.

A contentious issue is the "shoot-to-kill" approach. According to Duffy (2010:82), governments responded to international pressure to save elephants and rhinos through the development and deployment of military-style practices. In 1988, President Daniel Arap Moi from Kenya gave permission for the Kenya Wildlife Service to use a shoot-to-kill policy against suspected poachers. In 1986, Prime Minister Robert Mugabe from Zimbabwe assented to a "shoot-to-kill" policy for those situations when the Department of National Parks and Wildlife Management (DNPWM) patrols encountered heavily armed poachers in protected areas (Hanks, 2015a:30). In Tanzania, Operation Uhai in 1989 was used to sweep all parks and neighbouring communities of suspected poachers (Duffy, 2010:82).

In 2013, Botswana introduced a hard-line approach towards dealing with poachers. According to Hanks (2015a:191), the warning was reinforced by Botswana's Minister of Environment, Wildlife and Tourism at the Africa Elephant Summit in Gaborone in December 2013. It was stated that the Botswana government has maintained its position of "shoot-to-kill" in their quest to stop poaching (Hanks, 2015a:191).

2.6.6 Demand reduction

Some Western NGOs seem to believe that the only solution to the poaching pandemic is to educate or otherwise convince Asian consumers that the use of rhino horn is inappropriate. According to Duffy (2010:219), conservation agencies and NGOs find it difficult to show that their campaigns have a direct

impact on buying habits. Furthermore, it is difficult for NGOs to turn their attention to their own supporters and point out their role in creating conservation problems. They risk alienating their donors, and supporters may not be willing to accept that their own lifestyles and demand for wildlife products create problems far distant from where they live.

According to Cheung (1995:152), a change in the traditional beliefs and cultural practices of consumers is crucial to curbing demand in the long term, and can be accomplished through culturally sensitive public awareness and education campaigns. Cheung admits that in the short term this is virtually impossible, as such beliefs and practices are so entrenched in ancient medical customs, that many in the Chinese medical community still advocate them.

CITES recognises that demand reduction is a key element in addressing poaching and illegal rhino horn trade. Resolution Conf. 9.14 (Rev. Cop15) urged all implicated states to work with user groups and industries to reduce use and consumption of rhino horn.

t Sas-Rolfes (2012:13) argues that there are three reasons why this approach may not work to prevent the current poaching onslaught:

- Firstly, the approach is predicated on the conviction that rhino horn has no medical value.
- Secondly, it is disingenuous to argue that the use of rhino horn medicine necessarily causes poaching when horn can be obtained by non-lethal means.

- Thirdly, a general publicity campaign may have an impact on the marginal (fringe) consumers, but is unlikely to reach those actually responsible for paying the extraordinarily high prices that are driving the poaching problem.

Traditional Chinese Medicine (TCM) is an element of indigenous culture that is well established, having existed for thousands of years, and today there are universities for TCM studies, such as the Jiangxi University of Traditional Chinese Medicine (Zhou, Xie & Yan, 2011).

The Chinese banned the use of rhino horn in traditional medicine in 1993, and TCM practitioners have shown a high regard for conserving endangered species. According to Hanks (2015b), the likelihood of completely stopping its use is very small, for two main reasons:

- China is a country of over 1,3 billion people, with 56 different languages. It would be a formidable task to contact even 1% of that total spread across such linguistic diversity.
- TCM is so well entrenched in China that it would take at least two to three generations to wean people away from some of the products they believe have genuine therapeutic and medicinal properties – an unrealistic time frame at present rates of poaching.

According to Du Toit (2013:187), a presentation at a workshop held in China in 2007, provided extensive data from direct consumer surveys pertaining to tiger bone, undertaken between 2004 and 2006 in 11 Chinese cities and 16 hospitals. The surveys posed questions to two different sample groups: the

general public and ailing patients. Among the former, there was an 88% level of awareness that tiger bone was banned, with 5,6% of respondents expressing an interest in acquiring some of it. However, among ailing patients there was a 97,2% awareness of the ban, but despite this, 61,3% of respondents wished to acquire it. Among the general public, the percentage of respondents eager to acquire tiger bone would drop to 0,26% if the ban were lifted: most of the 5,6% were keen to acquire bone to stockpile it for potential future use. The following can be deduced from the results of the survey:

- The majority of ailing patients place their perceived health needs ahead of complying with the ban; and
- The ban is likely to stimulate a degree of speculative stockpiling.

2.6.7 Technology

There is increasing use of existing and new technology. The Council for Scientific and Industrial Research (CSIR) plays a very important role in this regard – especially with SANParks, where it takes on the role of technology capability provider at strategic, tactical and operational level.

There is a growing interest in using unmanned aerial vehicles (UAVs) for conservation law enforcement. Poachers mostly work at night, and mostly when the moon is close to full. Rangers have to operate more effectively at night. UAVs could be equipped with night-time and thermal-imaging cameras which can “see” poachers, even in the dark. The idea is to detect poachers before they strike, with the cameras providing GPS co-ordinates of their location. Helicopters and microlights are also being effectively used in anti-

poaching activities. This kind of technology is expensive, and cannot always be afforded by private rhino owners.

2.7 SUSTAINABLE USE

Sustainable use can briefly be defined as use of wildlife without jeopardising the continued survival of species (Duffy, 2000:9). The significant increase in game numbers and the land used to breed wildlife, has resulted in South Africa becoming the recognised authority in global conservation best practice and the sustainable use of natural resources.

All species have a deep survival instinct. They do anything they can to secure their own survival chances. Conservationists have a name for this survival instinct – namely “sustainable development”. Conservation through sustainable use can take the form of non-consumptive use – such as ecotourism and photographic safaris, or consumptive use – such as trophy and/or meat hunting, or a combination of both. The success of this approach can be measured by the growth in private land. A substantial increase in numbers of indigenous wildlife species has been a direct result.

Wise use within the broader concept of sustainable development is not a single issue such as the environment. It is a different model of progress, balancing the social and economic needs of the human species with the non-negotiable imperative of living within the earth’s natural limits with and through biodiversity. It is as much a challenge to one's philosophy and personal values, as to one's political and economic systems, requiring a shift from an ethos of exploitation and domination to one of stewardship and global responsibility.

Wildlife cannot survive in a developing economy unless it is self-supporting. If a zero-use preservation option is enforced, use of wildlife will often take an illegal and unsustainable form. Opposing sustainable use is therefore tantamount to opposing the objectives of biodiversity conservation.

South Africa is one of the world's richest areas of biodiversity. One of the most important tasks of the government, national parks, provincial parks, game ranchers, and every organisation involved in nature conservation, is to ensure that the species and ecosystems of the country are maintained for their natural and ecological value, and that they are promoted for sustainable use to support new and innovative approaches to development.

The commitment of the International Union for Conservation of Nature (IUCN) (2000) to sustainable use, allows diverse interest groups, ranging from governments to tourism businesses, local communities, state conservation agencies and local NGOs to work together. Unfortunately a number of accredited IUCN members oppose the organisation's commitment to sustainable use.

Among the IUCN's global membership, sustainable use has different implications, depending on a particular member's world view. The world view dichotomy seems to fall between north and south (Allen & Edwards, 1995:97). Many members from developing countries view sustainable use as the best option for societies in rural areas, who depend on wild species, while many members from developed countries view sustainable use with more scepticism.

According to members from the developed countries, sustainable use appears to contradict the aims of conservation. They view sustainable use as a threatening concept, because it challenges perceptions of what conservation is about. More significantly, sustainable use challenges other paradigms in conservation. The possible lifting of the ban on international trade in rhino horn, in order to allow sustainable use, is an example of such a challenge.

In early times in South Africa, the objective of environmental conservation was based mainly on a preservationist motive. As in most of South Africa at that time, the wildlife management actions were aimed at maintaining the system untouched (Els & Bothma, 2010:932).

The concept of 'conservation' differs from that of 'preservation'. Preservation means keeping people away from wild animals and plants. Conservation, on the other hand, means people are allowed access to, and also to utilise, natural resources in such a manner that the resources are not exhausted. It may even be improved in quality and quantity (Verdoorn, 2008:15). Thomson (1986:25) makes a distinction between these two concepts, and explains that conservation implies "wise use", while preservation implies "protection from harm". Preservation revolves around saving or preserving animals, usually in national parks or game reserves. According to Duffy (2010:149), this model is reflected in the definitions that IUCN uses for protected areas; for example, an IUCN Category 1a area is a strict preserve which can be used only for scientific research, while a Category 1b is a wilderness area managed to protect its "natural condition".

In contrast, sustainable use does allow for human use of wildlife, as long as it does not damage long-term survival. Duffy (2010:149) then refers to the term 'use', and differentiates between 'consumptive' and 'non-consumptive' use. Non-consumptive uses of wildlife are basically those that do not kill the animal – for example, photographic tourism. Consumptive use refers to activities which result in the animal being killed.

History shows that the negative incentives in protectionist policies, such as trade bans and law enforcement, are simply not enough to deter people from overexploiting wild resources (Allen & Edwards, 1995:94).

The South African environmental authorities now endorse the principle which was accepted by the IUCN, that the sustainable utilisation of renewable natural resources is a legitimate form of conservation.

2.7.1 Hunting as a form of sustainable use

Hunting is generally one of the most demonstrable forms of sustainable use. There has been an increase of most game animals in South Africa, due to the demand by hunters for these animals. On most game ranches, owners allow sustainable hunting to ensure that the populations remain viable and productive. There are some exceptions, and sometimes the preservation strategy becomes a necessity to ensure that a species or species complex are not exhausted, such as the oribi *Ourebia ourebi* (Verdoorn, 2008:15).

As can be expected, the use of hunting as a conservation tool generates much debate. According to Emslie (2005), this is due to the philosophical differences of opinion on –

- whether it is right to kill individual animals to further overall conservation objectives for the greater good of a population or species; or
- whether one supports the principle of sustainably using wildlife and resources to generate revenue to help fund conservation management programmes, and to create positive economic incentives to encourage the private sector and communities to conserve wildlife and habitats.

Trophy hunting forms the economic backbone of the hunting industry, based on the income generated both directly and indirectly. Foreign (or international) hunting forms the bulk of the trophy hunters in South Africa (Du Toit, Van Rooyen and Bothma, 2010:643). According to Child, Musengezi, Parent and Child (2012:12), the recovery of wildlife over much of Southern Africa has gone hand-in-hand with trophy hunting, which is a robust, low-risk solution for two reasons: firstly, the mathematics of population biology, and secondly, the transparency of safari hunting markets. An offtake of 2-3% provides a steady supply of quality trophy males, compared to the population growth rate of 10% to 30%. Trophy hunting is profitable and ecologically robust, even more so because trophy hunting markets are personalised and information rich.

The legal harvest of white rhino (i.e. hunting) is economically motivated, and is regulated through a system of permits, mostly on private land. Limited hunting of white rhino has been undertaken since 1968. This has clearly been sustainable because, since hunting began, numbers of white rhino have increased. Legal hunting, combined with the impact of poaching, has not yet

reached a level where it has caused a cessation in population growth (Emslie, 2005).

The 13th Conference of the Parties (CoP 13) of CITES from 2-14 October 2004 in Bangkok, Thailand, also approved quota applications by Namibia and South Africa each to sport hunt five surplus male black rhinos per year.

Due to the significant economic benefits of hunting to game farmers (together with live sales and ecotourism), the private sector has increasingly stocked these animals, effectively maintaining rapid metapopulation growth, and contributing to the expansion of the species' range with a further 22,274 km² added to the conservation estate in South Africa (South Africa, 2013c).

According to Benson (2004:40), hunting for recreation has contributed the most towards the protection and wise use of nature around the world, because hunters wanted to protect land and animals so that hunting could continue over time. Kenya, which imposed a blanket ban on all hunting in the 1970s, has lost almost 85% of all its game.

The anti-hunting animal rightists argue that because international trophy hunters strive to always remove the biggest and best breeding males from the animal herds – i.e. the biggest trophies, it weakens the genetic makeup of wild animal populations. According to Thomson (2006:28), the truth is that every year more and more record trophies are being taken, and this has been continuing for decades – not just for years.

2.7.2 Community conservation

The lucrative illegal market for rhino horn is not the only cause of the poaching pandemic; poverty is another reason. Poverty is rife in Africa, and when the people are reduced to the survival level on the human hierarchical scale of needs, people from these communities will do anything in order to survive. Communities who are located next to protected areas bear the brunt of exploitation, whence crime syndicates recruit potential poachers. If a poacher from such an impoverished community is confronted by the last rhino on earth, he will still kill it (Thomson, 1992:37). The development of a new wildlife culture is absolutely imperative if the continent's wildlife is to survive (Thomson, 1992:42).

Various projects were launched globally, that aimed to relieve the pressure of human survival in communal rural communities. The international shift in emphasis in the approach to practical conservation and its acceptance as a point of departure for wildlife management, also had an impact in Africa.

According to Els and Bothma (2010:926), the main objective of these projects was to relieve the pressure being exerted by humans on conservation areas. This was done by channelling material advantages from the conservation areas to their neighbouring rural communities. Implementation was based on three main strategies, which were followed either singly or in combination:

- The first strategy was to improve wildlife management measures, and/or to create buffer zones around these conservation areas where utilisation was allowed.

- The second strategy involved compensating loss of access to, or replacement of, the natural resources in the conservation areas.
- The third strategy was to help the local communities to develop socio-economically in other ways, so as to reduce their dependence on the renewable natural resources of their environment.

Areas managed by rural communities, either alone or in partnership with private enterprise and government agencies, should furthermore assist in removing the “hard edge” from essential core conservation areas, where human intervention and management are necessarily being kept at an absolute minimum. These “hard-edged” protected areas would have “overflow zones” within the surrounding communal and private areas, once the idea has taken hold. In the buffer zones, wildlife can be utilised sustainably for the economic benefit of all living there. This fact alone will give all communities and private owners around a protected area, a vested interest. Examples of multiple use zones exist in South Africa, Namibia, Zambia and Zimbabwe.

Despite the variety of institutional structures, the new initiatives share a key assumption: conservation policies will work only if local communities receive sufficient benefits to change their behaviour from taking wildlife to conserving it. The benefits offered by the programmes to induce behavioural changes, fall into three broad categories (Gibson & Marks, 1995:944). The first type is linked directly to wildlife: locals receive jobs, and benefit from the meat of safari-killed game, and a few programmes directly give households a share of the income. The second type is linked indirectly to wildlife, and consists of the

standard goods dispensed by development projects – such as schools, clinics and houses. The last type relates to the empowerment of rural residents, allowing for a greater degree of participation in decision-making.

According to Milton (2000:119), community-based conservation involves more than consultation and participatory planning. There needs to be an economic incentive to conserve, rather than to overexploit, resources. Without economic development, natural resources are unlikely to be sustainably managed or conserved.

The aforementioned projects encountered problems as well. According to Gibson and Marks (1995:946), the ADMADE programme in Zambia experienced serious difficulties that reflected its fundamental assumptions and design. Local hunters changed their tactics and prey. Chiefs quickly realised the potential of their position in the new scheme, and those initially not involved in ADMADE later clamoured to join.

Zimbabwe's CAMPFIRE still contends with considerable levels of poaching. Some reports claim that illegal hunting has increased after CAMPFIRE's introduction (Gibson & Marks, 1995:951). It is sometimes difficult to identify the community, as communities are not homogeneous in their opinions, attitudes and needs, and there are likely to be strong differences within any group of people living in a single geographical area (Milton, 2000:120).

This approach was persistently criticised as being incapable of addressing poaching in the long term, especially commercial-scale poaching for lucrative wildlife products such as ivory, tiger bone and rhino horn (Duffy, 2010:97).

According to Child *et al.* (2012:4), it is naïve to suggest that wildlife can resolve poverty for millions of people on drylands, but, on the other hand, Community Based Natural Resource Management (CBNRM) has clearly benefited both people and wildlife where it has been implemented with some level of competence.

Despite the normal problems encountered in this regard, all those with experience of facilitating or participating in community-based conservation projects, felt that the approach was appropriate for South Africa's economic and environmental needs.

With increased dependence on wildlife resources comes decreased effectiveness of protectionist conservation strategies – such as the creation and management of protected areas, and national and international laws designed to enhance the protection of threatened species. People will take what they need, in order to survive (Allen & Edwards, 1995:93).

Emerging from the sustainable use debate is a clear recognition by many that positive incentives are the link between resource use and good resource management. According to Allen and Edwards (1995:94), history shows that the negative incentives in protectionist policies, such as trade bans and law enforcement, are simply not enough to deter people from overexploiting wild resources.

With regard to the position in South Africa in 1993, the former National Parks Board (now South African National Parks (SANParks)) initiated a comprehensive community partnership programme in the KNP. The programme is known as the Integrated Conservation and Development

Project (ICDP) of the KNP, and it was designed to meet some of the needs of the rural communities who live west of the KNP. Similar steps have been taken by the North West Province, Mpumalanga, the Eastern Cape and KwaZulu-Natal (Els & Bothma, 2010:931-934).

According to the Minister of Environmental Affairs, in a media release on 2 September 2014, poachers come from the communities. It is also from these communities, many of them underdeveloped and neglected, that the natural instinct to protect wildlife may be superseded by monetary concerns, because the communities are simply too poor. To ensure the long-term sustainable utilisation of wildlife, it is important that communities become involved – not only by creating an enabling environment that facilitates rhino ownership and management for disadvantaged communities, but also through creating economic alternatives to poaching within these communities.

2.7.3 Tourism (wildlife tourism)

Wildlife-based tourism is a non-consumptive means of using wild resources to benefit human populations. According to Barnes, Burgess and Pearce (1992:136), wildlife tourism offers a nation the chance to develop a high value added industry that simultaneously protects wildlife by removing or reducing the incentive to develop land for agricultural or other uses and/or exploit wildlife for consumptive uses.

Tourism is more stable, over the long term, than any other foreign exchange earners. Compared with other industries, which are prone to abrupt fluctuations and frequent sharp declines, tourism has seldom fallen into a

serious long-term downturn, making it seem a near recession-proof industry at the global level (Honey, 1999:91).

The ability to maintain profits in any industry depends on demand and the structure of the market. There is no economic profit in any perfectly competitive market with a large number of suppliers providing identical goods (Isaacs, 2000:65). South Africa is synonymous with the Big Five – one of only a few countries that can compete in this market. Should the rhino become extinct, South Africa stands a chance to lose a substantial number of tourists.

According to figures from Statistics South Africa, 14,860,216 foreign visitors arrived in South Africa in 2013, a 10,5% increase over 2012. Of these, 9,6 million were tourists, translating to a 4,7% year-on-year increase in international (including the rest of Africa) tourist arrivals, and a 7,1% increase in overseas (excluding Africa) tourist arrivals. According to figures for the period ending December 2012, direct tourism contribution to the gross domestic product (GDP) grew from R83,5 billion in 2011 to R93,3 billion (or 3% of the GDP) in 2012. At the same time, tourism contributed approximately 617,287 direct jobs in 2012, amounting to about 4,6% of direct employment in the country – up from over 591,785 direct jobs in 2011 (Department of Tourism, 2014).

Ecotourism (which includes wildlife tourism) has the potential to alleviate poverty in South Africa by bringing money into the economy and creating jobs. With tourism growing, the present time offers an opportunity to capitalise on wildlife tourism, to ensure that people living close to the areas being visited are benefiting from the economic growth. Reinvesting a portion of the

earnings from wildlife tourism directly into the communities living next to the tourist destinations, would alleviate poverty.

An honest account of the ecotourism industry (including wildlife tourism) also demands examination of its negative impacts. These side effects can be described in terms of damage inflicted intentionally, and unintentionally, on native fauna and flora, indigenous cultures and various ecological assets (Isaacs, 2000:61).

Roads and tracks can act as barriers to the movement of wildlife. In addition, many animals avoid roads, tracks and trails (Buckley, 2004:212). Where ecotourism actively involves wildlife viewing, it can frighten animals away, disrupt their feeding, or acclimatise them to the presence of people (Buckley, 2004:213).

According to Isaacs (2000:64), the negative impacts of tourism can be reduced, and the ecotourism enthusiasts can try to (1) persuade government to use its regulatory and administrative powers for the public benefit, (2) convince private entrepreneurs that ecotourism is personally profitable, and (3) coerce individual entrepreneurs and tourists to comply with its principles for philanthropical reasons.

2.7.4 Can the “sustainable use” approach save the South African rhinos?

The basic message of the sustainable use approach is that wild resources and ecosystem services are extremely vulnerable. If the ways that these resources and services are governed were changed, and landholders and

rural communities could be placed at the junction of benefit and management, wild resources would pay for themselves, and, simultaneously, address rural poverty and environmental injustice (Child *et al.*, 2012:5).

The sustainable use approach aims to maximise the benefits from wildlife to the people on whose land it lives. According to Child *et al.* (2012:2), between the 1960s and 1980s park authorities in Southern Africa collaborated on a bold policy experiment: they devolved the rights to use wildlife to landholders (and communities), they encouraged multiple commercial uses of wildlife to drive up its value, and, in some countries, they deliberately slashed bureaucratic requirements which act as a tax against wildlife. These policies proved highly successful.

There are now reported to be some 9,000 game ranches in South Africa alone, and over 15,000 which combine wildlife with livestock. The South African game ranching sector has expanded at between 5% and 20% annually in the past decade, whereas real farm incomes have declined by 5,3% (Child, 2012:2). Game ranching is a diverse sector that combines ecotourism, the sale of live animals, several forms of hunting, and, as a by-product, meat production. Environmentalists who promote private sector involvement, argue that individuals seek to promote their own welfare and so protect the resources on which their welfare depends – and also because economic values for resources provide the most efficient way of allocating resources (Duffy, 2000:68).

Rhino conservation in South Africa has historically been successful. From fewer than 100 white rhinos in 1910, they have grown to a viable population, of which a substantial number occur on private land.

Child (2012:3) uses the framework in Table 2.3 for analysing conservation strategies:

Table 2.3: An economic framework for analysing conservation strategies.

Proprietorship	High price	Low Price
Weak	<p>Frontier economy:</p> <p>Wild resources are decimated through poaching and unsustainable harvesting.</p> <p>Quadrant 1</p>	<p>No hope economy:</p> <p>Wild resources are usually replaced by more valuable and/or privately owned (domestic) resources.</p> <p>Quadrant 2</p>
Strong	<p>Sustainable use approach:</p> <p>Wild resources are conserved through the sustainable use approach and community-based natural resource management.</p> <p>Quadrant 3</p>	<p>Survive if subsidised economy:</p> <p>Wild resources are usually replaced by more valuable domestic resources, but are sometimes conserved because people like them and can exclude other users.</p> <p>Quadrant 4</p>

Source: Child (2012:3).

The sustainable use approach is most effective where proprietorship is strong and prices are high – as indicated in Quadrant 3 in Table 5. However, where wildlife is valuable, but proprietorship is weak or absent (Quadrant 1), a frontier or open-access economy exists with a high likelihood that wildlife will be rapidly exploited. Child (2012:3) then refers to the position regarding rhino

where the approach was to ban trade in the hope of reducing the incentives for poaching. This ban has moved rhino from Quadrant 1 to Quadrant 2, which is the 'no hope' strategy, where landholders switch to more viable enterprises, park agencies have less income to fight poachers, and government places a lower priority on wildlife because its social and economic benefits are reduced.

According to Child (2012:3), a more constructive strategy is to move from Quadrant 1 to Quadrant 3 by devolving rights to use rhino to landholders (and reduce regulatory restrictions), and encouraging trade to drive up its price through innovation.

According to Hume (2013), the wildlife ranching sector, were it given the opportunity to prosper through utilisation – both consumptive and non-consumptive, is the one and only buffer available which will ensure the future survival of South Africa's rhinos.

't Sas-Rolfes (1993:ix) is of the opinion that a regime which allows the full appropriation of rents by the custodians of rhinos would seem to provide greater incentives to conserve, while simultaneously improving economic efficiency. Supply of white rhino is relatively unconstrained, with individual animals quite frequently being offered for sale at game auctions. Consequently, the private sector is significantly involved in this market. There is also considerable private sector involvement in both tourism and trophy hunting.

Since the first auction of white rhino in 1986, a total of 3,226 animals have been sold at a value of R498 million. The prices of white rhino, since 2000,

are shown in Figure 2.2. There was a decrease in the price of white rhino between 2000 and 2005. Pseudo-hunting started in 2006, whereafter there was an increase in the price of white rhino until 2008 (Du Toit, 2015:64).

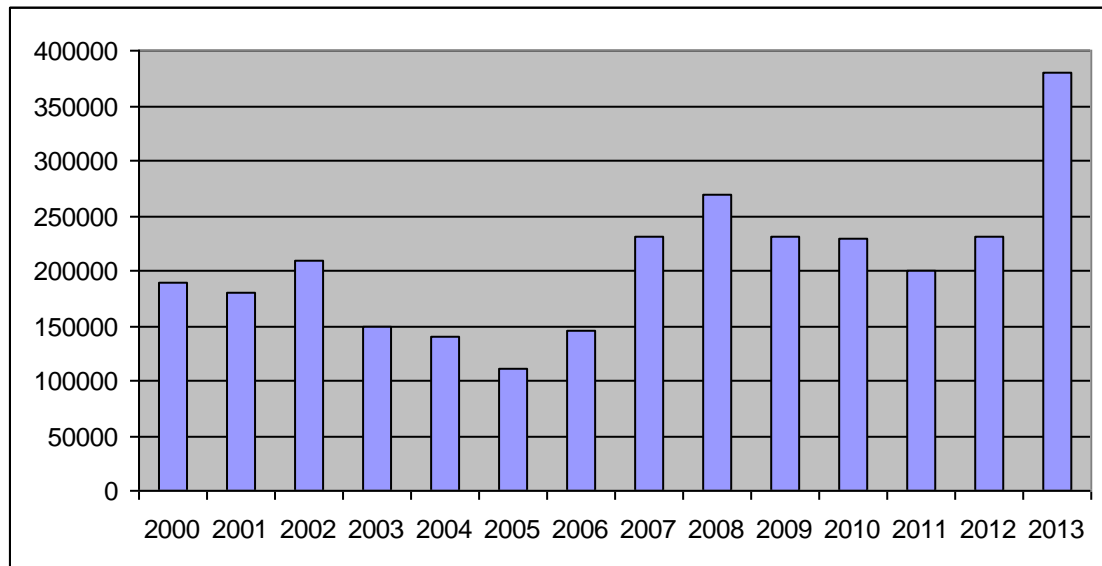


Figure 2.2: Auction prices of white rhino (2000-2013). **Source:** Du Toit, 2015:64.

The public sector is involved mainly in providing tourist services, and owns a number of parks and reserves. The largest number of rhinos occur in these parks and reserves. Many reserves provide hunting in addition to tourism. They are also involved in selling live animals to the private sector. Public sector agencies are unlikely to sell black rhinos to the private sector without an express undertaking to breed them for conservation purposes alone (‘t Sas-Rolfes, 1990:8).

2.8 COMPARATIVE EXAMPLES

2.8.1 Elephant

Ivory has been an item of trade since pre-history, and its use is deeply ingrained in many cultures. Unlike other wildlife products which are primarily used for medicine, food and clothing, ivory is primarily used for ornamental purposes.

Four decades ago there was a thriving legal trade in ivory. According to Rice (2015), efforts to regulate the trade in ivory had failed, hence CITES adopted the international ban on ivory trading, in 1989. In 1999, CITES agreed to allow an “experimental” sale of stockpiled ivory to Japan. At the 2002 CITES meeting, China blamed the 1999 decision for confusing people, and cited the “experimental” sale as the principal cause of the increasing amount of illegal ivory entering its shores.

By 2005, China started campaigning for another stockpiled ivory sale in which it would be a recipient. Poaching had begun to increase, along with the number of large-scale seizures of illegal ivory, many of which were destined for China.

In 2008, CITES agreed on another sale to accredited Chinese and Japanese traders. The stockpiled ivory from four countries (South Africa, Namibia, Botswana and Zimbabwe) was sold at an auction for an average price of \$160 per kilogram. In China, this legal ivory was sold on to the registered traders and dealers at from \$450 to \$1500 per kilogram. Once it reached the

registered retail outlets, some of it was sold at around the equivalent of \$7,000 per kilogram (Rice, 2015).

Bennett (2015) is of the opinion that there is a mismatch between the demand for ivory and the quantity of tusks available. Similar arguments are raised in the case of rhino horn; however, in the case of ivory, the elephant, *Loxodonta africana*, has to either die from natural causes, or be killed, in order to provide ivory for the market. In the case of rhino horn, the horn can be harvested on a sustainable basis.

According to Duffy (2010:152), the continuing "wrangles" over ivory and rhino horn trading reveal that merely banning the trade does not provide a simple and effective answer. A trade ban is problematic, because it is a one-size-fits-all solution. It is a simplistic and blunt instrument, which fails to grapple with the everyday complexities of wildlife management in different places all over the world (Duffy, 2010:153).

2.8.2 Vicuña

Research was done in 2012 (Jacobsen, 2012) on the parallel between the rhinoceros and the vicuña, *Vicugna vicugna*. The vicuña is native to the Andean highlands of Argentina, Bolivia, Chile and Peru. The wool of the vicuña is highly sought after in the fashion industry. Prior to European colonisation, the vicuña was considered sacred, and only royalty was allowed to wear the wool. They then numbered about two million animals.

From the time of the Spanish Conquest up to around 1964, there was unrestricted hunting of the species. In the mid-1960s, it was estimated that

vicuña numbers were down to only 6,000 animals, and they were declared endangered.

In 1966, a nature conservatory was established for the vicuña by the Peruvian government. Poaching was a serious problem, as poachers came from the impoverished local communities. Game wardens were trained in conservation and anti-poaching measures, but this proved too slow, and it was difficult to incentivise people with the mere offer of a job when the poaching racket was far more lucrative in the short term. In 1975, vicuña were listed as a CITES Appendix 1 species, and all trade in their products was prohibited.

In the 1980s, a Peruvian textile company initiated the “Shear a vicuña to save a vicuña” campaign, and developed a business plan where they would pay local communities to protect vicuña populations and gather vicuña wool sustainably. The wool would be manufactured into garments and sold internationally, and a large portion of the profit would return to the communities.

As a result of these efforts, the vicuña numbers increased, and CITES agreed to lift the trade ban on parts of the vicuña populations of Peru and Chile. They were listed as Appendix 2 species, strict control measures were put in place for certain herds, and all farmers had to comply with CITES regulations; however, vicuña could be farmed, herded, sheared, and their wool sold on the world market – without having to kill an animal.

In 1994, the vicuña numbers in Peru increased to 66,500, hence CITES relaxed the trade ban on vicuña in all its range states, and the majority of the

populations were listed as Appendix 2 species, for the exclusive purpose of allowing trade in their wool, and with restrictions on this trade.

In 2007, the vicuña population in Peru increased to 188,000 animals (55% of the global population). The increase in Peru's vicuña population is shown in Figure 2.3:

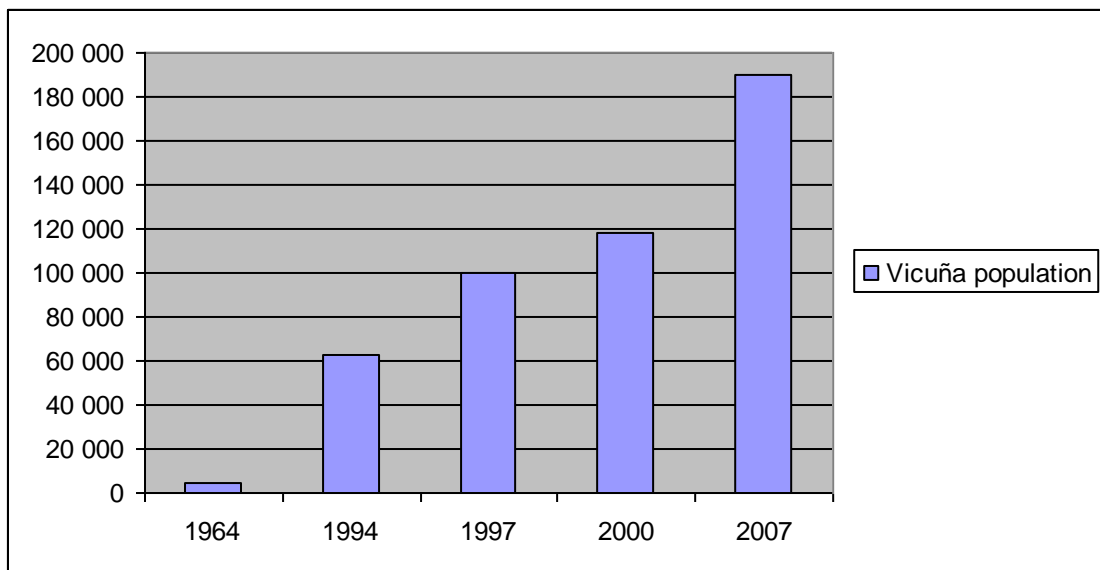


Figure 2.3: Peru's vicuña population 1964-2007. **Source:** Jacobsen, 2012.

2.8.3 Prohibition of alcohol in the United States

A prohibition on the consumption of alcohol was imposed in the U.S. in 1920 (Thornton, 1991). It was undertaken to reduce crime and corruption, solve rural problems, reduce the tax burden, and improve health and hygiene in the U.S.

Alcohol consumption had been decreasing by approximately 9% per annum in the ten years prior to prohibition in 1922. While there was a one-year dip the year after the imposition of a bar, the per capita consumption of alcohol

increased by 7% per annum in the following ten years, as shown in Figure 2.4 (Wiltshire, 2015a):

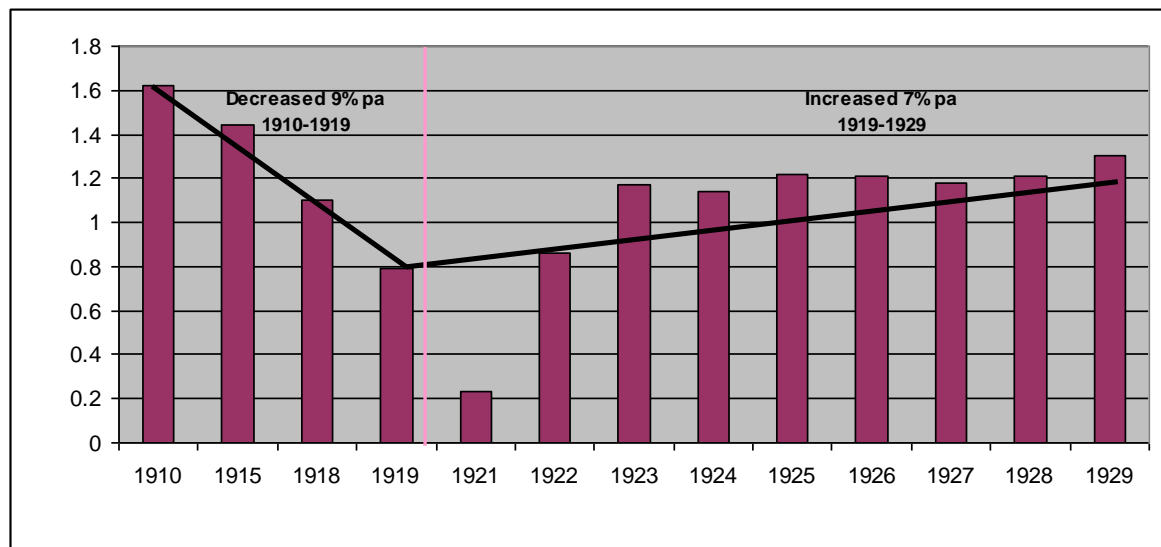


Figure 2.4: Alcohol consumption in the United States: 1910-1929. **Source:** Wiltshire, 2015a).

2.8.4 Deer Industry in New Zealand

Velvet antlers can be defined as “deer antlers, during their phase of rapid growth”, and have the name “velvet’ because of the velvet-like covering of hair. The first documented evidence of the use of velvet antler as a health tonic was found on a silk scroll recovered from a Han Tomb in Hunan Province in China. The scroll has been dated at 168 BC. Velvet antler is considered by the Chinese to be one of the most powerful animal-based remedies in their Traditional Chinese Pharmacopoeia (TCP).

Deer numbers in New Zealand have grown from a small number to approximately 1,2 million, from which is harvested 500 tons of antler velvet every year, at a price of \$150/kg or \$150,000/ton. No animals are harmed, it is

legal, and the velvet still goes mainly to China and a few neighbouring countries. There are plenty of deer still in the wild, with no poaching (Van Hoven, 2015).

2.9. THE CITES BAN ON INTERNATIONAL TRADE IN RHINO HORN

To regulate the wildlife trade, the IUCN, the WWF and the United Nations Environment Programme (UNEP) created another international organisation in 1975: the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) (Thomson, 2006:3).

The basic approach of CITES is to regulate international trade in wild animals and plants by listing them in three appendices to the treaty, and providing for different degrees of protection and trade controls in each category. Appendix 1 reflects the protectionist aspect by listing species threatened with extinction, and prohibiting commercial trade in them or their products altogether – subject to a few exceptions. Appendix 2, on the other hand, allows trade, subject to controls, in listed species which are not yet threatened but may become so. Appendix 3 enables a party to the treaty, which provides protection of a species in its domestic legislation, that species not being listed in appendices 1 or 2, to enlist cooperation from other parties, in order to control trade (Glazewski, 2005:50).

CITES specifically sets guidelines for states to follow in implementing their treaty obligations; however, it lacks an effective institutional mechanism for enforcement. CITES is similar to other international treaties, in that its text does not specify a mechanism of international enforcement which the parties can collectively use to ensure that other parties comply with the treaty

(Cheung, 1995:129). The white rhino and three Asian species were listed on CITES Appendix 1 at the Convention's inception in 1975. The black rhino was moved to Appendix 1 in 1977.

According to 't Sas-Rolfes (1997b:2), Appendix 1 listings of all rhino species has not had a discernible positive effect on rhino numbers, and does not seem to have stopped the trade in rhino horn. The listings led to a sharp increase in the black market price of rhino horn, which simply fuelled further poaching and encouraged speculative stockpiling of horn. According to Mander (2012:2), the ban has pushed the trade underground, and onto the black market, in order to feed demand.

According to Du Toit (2013:190), most consumer countries did not immediately adhere to CITES, thereby allowing for some collection of credible price data following the initial ban. This data shows that the 1977 ban was followed by a sharp increase in consumer prices for rhino horn in Asian markets. Official import data from at least three countries (Japan, Taiwan and South Korea) shows a significant price hike in subsequent years. Alongside Yemeni data, record pre-ban wholesale values for rhino horn were experienced, ranging from US\$ 17 to US\$ 75 per kilogram, but by 1980 they varied between US\$ 477 and US\$ 764 per kilogram.

Africa's black rhinoceros populations continued to be decimated, with estimated numbers dropping from about 12,750 in 1981 to some 2,550 by 1993. During this time, populations in Tanzania, Zimbabwe and Zambia were severely reduced – in the latter instance, to complete extinction. By 1991, an undercover survey in Taiwan revealed that the average black market

wholesale price for African horn was about US\$ 3,075 per kilogram, and Asian horn about US\$ 60,025 per kilogram. In Yemen, the early 1990s wholesale price (of African horn) was allegedly in the region of US\$ 1,200 per kilogram. In 2011, the average retail price appeared to be in the region of US\$ 65,000 per kilogram. This high price has encouraged a far more concerted and sophisticated organised crime element to enter the rhino horn market. Growth in market demand threatens to outpace the potential rate of supply under a trade ban, hence market prices should continue to rise. This makes rhino horn worthy of the attention of entrepreneurs who engage in trade and speculative investment (Du Toit, 2013:191-192).

Recognising the failure of the Appendix 1 listing, the following resolutions were taken by CITES:

- 1981: It was resolved to call on nations that were not parties to CITES, also to take measures to prevent the international trade in rhino products, and it called for a moratorium on the sale of all government and parastatal stocks of rhino products.
- 1987: It was resolved to call for even stricter measures, including the complete prohibition of trade in all rhino products both internationally and domestically. It also called for the destruction of government stocks of rhino horn, and suggested that affected countries should be financially compensated for destroying their stockpiles. Most range states refused to destroy their stockpiles of rhino horn, and several key consumer countries failed to implement domestic legislation.

- 1994: White rhino in South Africa were downlisted to Appendix 2, subject to an annotation. The annotation provided that only live animals and trophies would be traded commercially.
- 2004: A similar downlisting for Swaziland occurred, and limited black rhino trophy hunting quotas for South Africa and Namibia were allowed.

2.10 THE VIABILITY OF LEGALISING INTERNATIONAL TRADE IN RHINO HORN

It has already been mentioned in Chapter 1, section 1.2, that there are two schools of thought regarding approaches to prevent rhino poaching.

The first school of thought refers to those who believe that the rhino horn trade is wrong, and therefore has to be stopped. This can only be achieved by eliminating demand, mainly through the restrictions on trade – the “conventional approach”.

The second school of thought argues that any solutions to the rhino poaching problem must address the underlying economic forces. This point of view is also referred to as “sustainable use”. The pro-trade argument starts from the premise that poaching and illegal trade are a consequence of trade bans imposed by bodies such as CITES. The supply reduction provoked by the trade ban stimulates the black market and drives prices upwards. The high prices on the illegal market constitute powerful incentives that compensate for the costs and risks of wildlife trafficking. The trade ban thus fails to achieve its

goals, as demand and supply are funnelled underground into relatively contained illegal markets where prices and profits are very high.

It is acknowledged by both schools that there is a market for rhino products, hence many of the factors driving poaching and illegal trade in rhino horn, are economic in nature. Surging prices of rhino horn is clearly one of them. Other economic factors include the poverty in parts of rural South Africa and other range states, insufficient budgets for protected area management (especially on provincial level), and rising income in consumer countries – particularly Vietnam (Campbell, 2013:10).

The advocates of both schools accept that there is a market for rhino horn, leading to a number of implications (Department of Environmental Affairs, 2013:29):

- The fact that this market is – for the most part – illegal under CITES, does not mean that it does not exist. Declaring the trade in rhino products “illegal” has not closed the market down.
- An illegal market may have some unique characteristics, but dynamically it still behaves in much the same way as a legal market. A product’s illegal status does not negate the laws of supply and demand; it does, however, make it harder to analyse.
- From the perspective of the participants in the market (suppliers and consumers) there is probably little about rhino products that is innately different from many other products: it can be supplied profitably, and it satisfies particular wants or needs.

One of the proposals for fighting rhino poaching is to legalise the trade in rhino horn, and adopt a regulated market approach (RMA). The aim of increasing the supply of horn is to reduce incentives to poach, by driving down the price. There have also been numerous calls for the South African government to sell existing stockpiles accumulated from de-horning, natural mortality and the seizure of illegal horns, in order to generate funds for conservation efforts.

According to Collins, Fraser and Snowball (2012:6), the underlying logic of an RMA is that, through a series of sales of state-sanctioned stockpiles of confiscated endangered species products and/or endangered species products from captive breeding programmes (CBPs), the market price can be influenced downwards. It is contended that this would reduce the incentive to poach, and thus reduce the rate of poaching-related killing of endangered wildlife. The outcome of such a policy remains highly uncertain, given that for some endangered species' products, demand seems both very persistent and highly inelastic.

Elasticity of demand is a key concept used when studying basic demand/supply fundamentals. Products with an inelastic demand curve experience little or no change in demand as price changes. Examples of inelastic products would be highly addictive drugs and lifesaving medicines. On the other hand, an elastic product could be something that is easily substituted. A perfectly inelastic product would have a vertical demand curve, as shown in Figure 2.5, while a perfectly elastic product would have a horizontal demand curve:

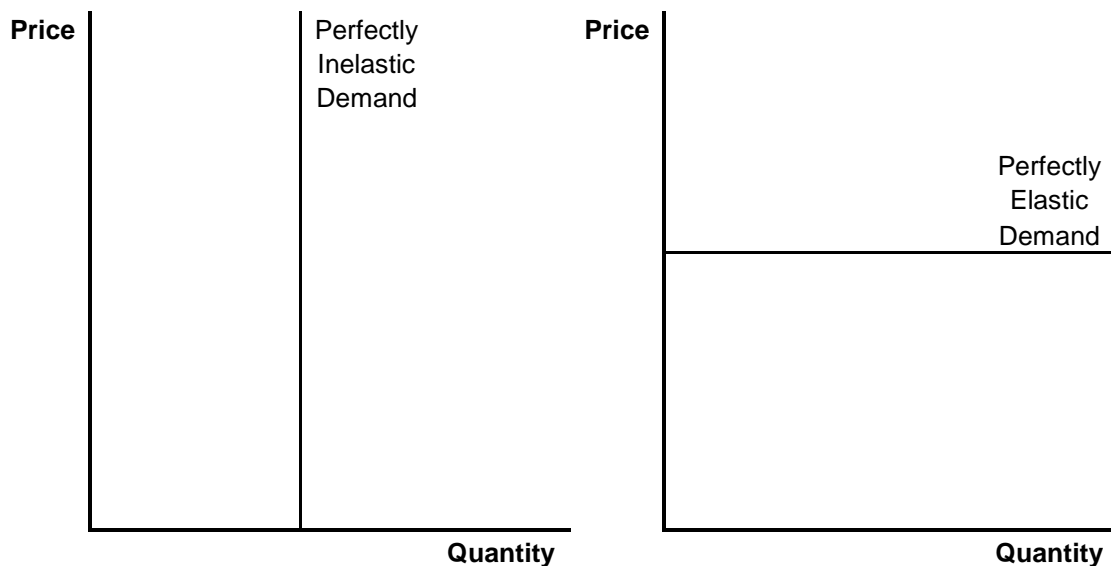


Figure 2.5: Elasticity of demand. **Source:** Küller, 2014.

Ferreira, Pfab, and Knight (2014) compiled a report, based on a workshop held in 2013, on management strategies to curb rhino poaching. The workshop was attended by 30 participants who had expert interest and experience across a broad spectrum of fields, including traditional affairs, resource economics, law, enforcement and compliance, conservation science and ethics. In addition, the attendees had a common interest in rhinos, and were representative of various value systems associated with conservation, animal welfare, animal rights, national and provincial South African government, and private rhino ownership. A risk-benefit analysis of five different rhino management strategies was undertaken to assess the potential for delivering agreed-upon rhino conservation objectives.

The demand and supply of rhino horn to the market for each of the five management strategies are described in Table 2.4 (Ferreira *et al.*, 2014:5):

Table 2.4: Summary of the risks and benefits associated with the management strategies to curb rhino poaching in South Africa.

Strategy	Detailed risk-benefit analysis
Direct disincentives (status quo)	Overall, risks were dominated by an expected general degradation of all conservation values with some measure of certainty. Negative consequences for economic values were highlighted, but participants were relatively uncertain about their impacts and the likelihood of them materialising. The strategy, however, carries some certainty regarding risks to the public perception and conservation reputation, including some costly logistical challenges. Overall, risks substantially exceeded benefits (Figure 2.6).
International awareness (demand reduction)	It was acknowledged with some uncertainty that declines in poaching rates and enhanced conservation effects may result from this strategy. Degradation of conservation values were thought to be more likely, but also with considerable uncertainty. There was also some uncertainty about what the consequences might be for the economic value of rhinos. This strategy carried some logistical challenges with considerable costs, but benefits to South Africa's reputation were anticipated. Overall, the strategy carried more risks than benefits (Figure 2.6).
Provision of live animals to consumer states to breed for horn	Direct poaching effects on rhinos may diminish, but indirect effects were identified as having potentially high negative impacts on the conservation values of rhinos in South Africa. There was general uncertainty about other conservation consequences, although some were perceived to be beneficial. The effect on the value of live rhinos was thought to be high in the short term, and to diminish over time. It was anticipated, although with some uncertainty, that there may be risks associated with animal welfare, ethics and South Africa's conservation reputation, but that benefits would more than likely accrue from consumer states being appreciative of the recognition of their traditional values. A large number of logistical challenges were envisaged. It was anticipated that revenue could be generated, creating further opportunities. This option carried more perceived benefits than risks (Figure 2.6).
Restricted trade in horn	Several consequences associated with horn stockpiling were identified. It was imagined that rhino owners may want to have the option to sell their rhino horn stockpiles, because at present, holding rhino horn is a security risk. It was envisaged that this management option would open the possibility to locally perfect the trading mechanism with its checks and balances, for later roll-out to the international market. Generally, the risk to conservation objectives remained, with

	much uncertainty and additional expectations of high logistical challenges associated with innovative criminal activities and stockpile management. Some opportunities associated with a number of anticipated conservation incentives were noted, in addition to the increase economic value of live rhinos through hunting opportunities. Overall, this approach carried nearly equal risks and benefits (Figure 2.6).
Unrestricted trade in rhino horn	Because of an anticipated reduction in poaching incentives, several benefits were identified for conservation and economic value objectives. These assessments, however, only carried some certainty. Enhancement of South Africa's conservation reputation was anticipated, even though there were some risks associated with South Africa's support of medicinal uses that may have limited value. The strategy was perceived to carry considerable challenges associated with establishing a legitimate trading partner, regulated trade procedures, as well as high costs associated with lobbying internationally to achieve CITES compliance, although these costs were anticipated to be offset by increased financial gains. Generally, this strategy had substantially more benefits than risks (Figure 2.6).

Source: Ferreira *et al.*, 2014:5.

The descriptions include each strategy's logistical challenges and opportunities, relative financial costs and revenue generation potential. A comparison of the five alternative management strategies (Figure 2.6) suggests that rhino poaching may best be addressed by management strategies that generate benefits at least equal to, or higher than, the associated risks involved in the supply of horn to the market. Overall, unrestricted international trade in rhino horn produced the best risk-benefit score, while the worst-case scenario, in which risks substantially exceeded benefits, was provided by the status quo strategy (Ferreira *et al.*, 2014:6).

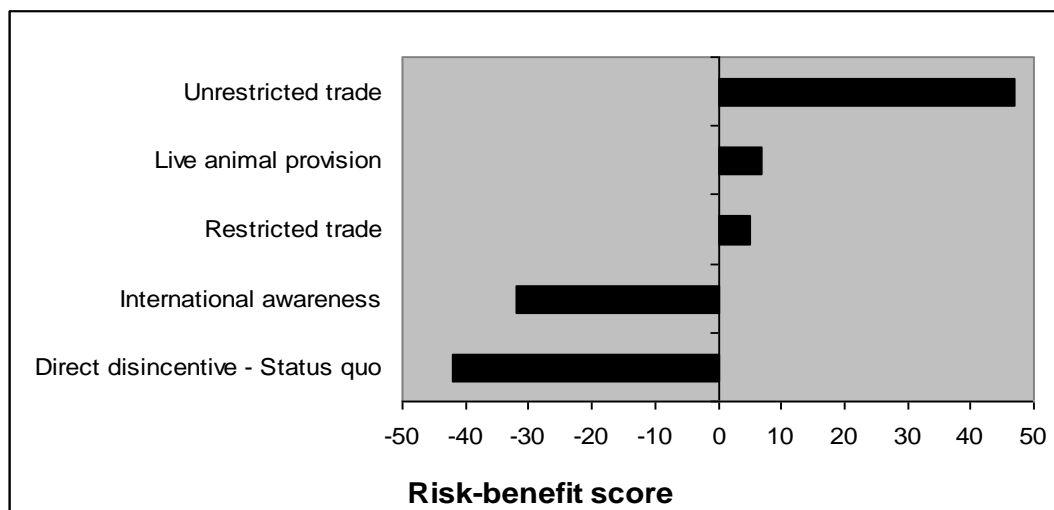


Figure 2.6: Relative comparison of risks and benefits for five evaluated management strategies to curb rhino poaching in South Africa. **Source:** Ferreira *et al.*, 2014:6.

According to Bulte and Damania (2005:1223), the key insights to safeguard endangered species from excessive hunting pressure are based on simple economics: conservation efforts should be geared towards reducing the benefits of harvesting, or increasing its cost. Information campaigns, for example, are aimed at lowering consumer demand by stigmatising the consumption of certain wildlife products. As a result, demand shrinks and prices fall, eroding the profitability of harvesting effort, and lowering hunting pressure. Raising consumer awareness and altering human preferences, however, are difficult and time-consuming, and often hold limited impact.

Enforcement by anti-poaching units, in contrast, raises the cost of poaching by introducing an expected fine or penalty. Both approaches – raising cost and reducing benefits – have been effective, with varying degrees of success. Bulte and Damania (2005:1223) call this the “supply-side approach” to wildlife conservation. Supply-side conservation aims to provide a cheap substitute for

the wildlife commodity in question, depressing the commodity's market price – which lowers hunting incentives, and forces harvesters to search for alternatives.

Fischer (2004:927) states the following:

Traditional economic theory says that selling confiscated goods should unambiguously lower prices by satisfying consumer demand. These lower prices mean the gains from poaching must be smaller, leading to reductions in the activity.

Campbell (2013:12) has adapted the model by Bulte and Damania (2005), which illustrates this effect, showing that if a farmed quantity of a wildlife product such as rhino horn is put on the market, prices will decline, and supply sourced from poaching will fall (Figure 2.7):

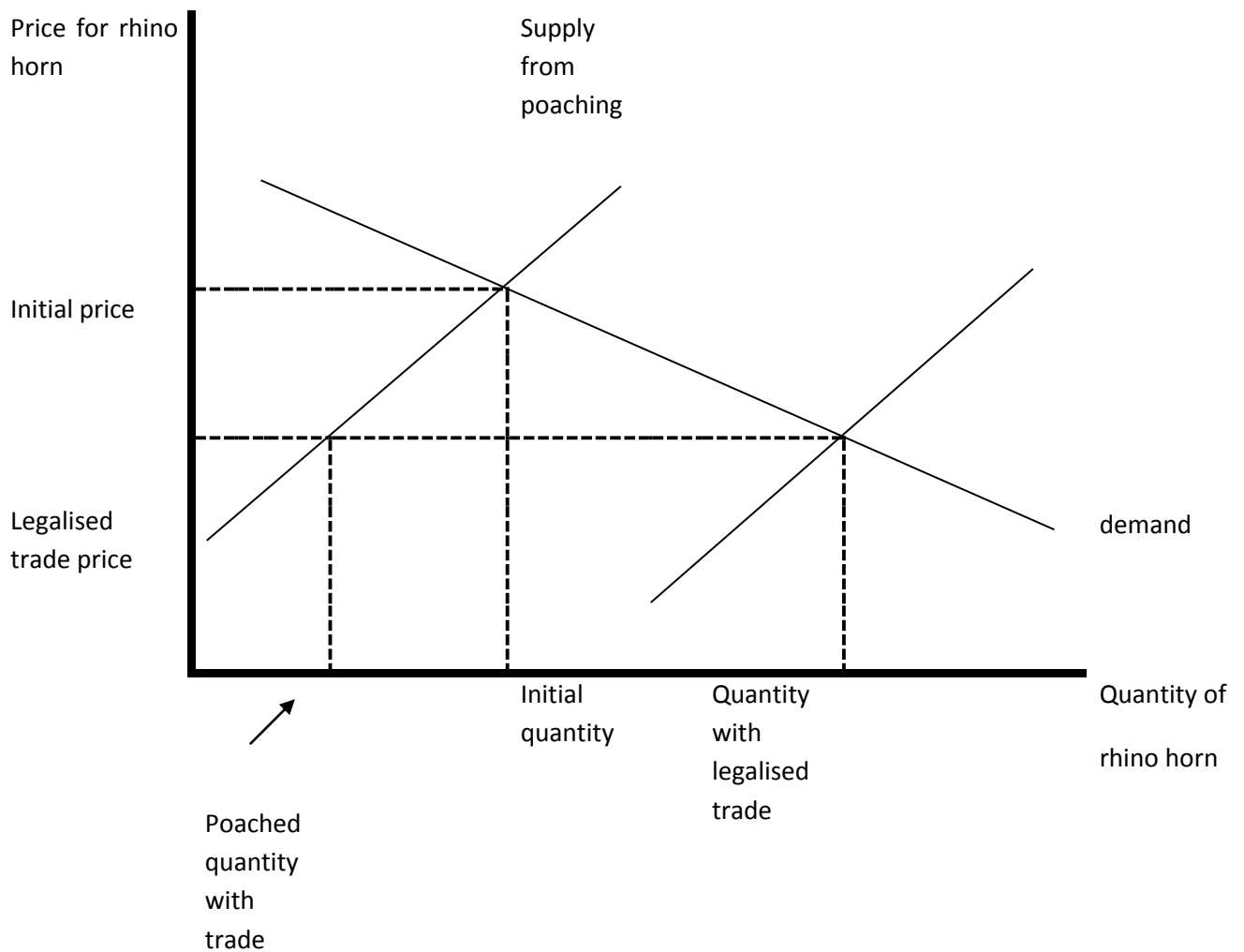


Figure 2.7: Basic model of impact of trade on poaching. **Source:** Adapted by Campbell (2013:12) from Bulte and Damania (2005).

According to this model, the initial supply of rhino horn comes entirely from poaching, which results in the high “initial price” and the “initial quantity” supplied and demanded by the market. As trade is legalised, farmed and stockpiled rhino horn is allowed on the market, expanding total supply, and reducing the price to the “legalised trade price”. At that price, poaching has become less attractive, so the quantity supplied to the market by poaching has been reduced from the “initial quantity” to the level of “poached quantity with trade”, the remainder of the supply to the market being made up of supply from legal sources (Campbell, 2013:13).

According to Fischer (2002:34), although the traditional market model for endangered species products suggests that sales of confiscated and legally harvested goods help reduce incentives for poaching, more complex interactions between markets for endangered species products can lead to results that contradict the traditional model. When the policy goal is simply to minimise poaching, the intuition behind the “to ban, or not to ban” question depends on the characteristics of the markets. If demand from law-abiding consumers is relatively high, and laundering can and would occur, an enforceable ban on trade would minimise poaching. However, if the bulk of demand comes from non-compliant consumers, and if laundering would generally occur, then allowing sales of certified goods would tend to lower prices and encourage a return to poaching.

Bulte and Damania (2005:1223) argue that the basic premises of the supply-side model ignore important elements of conservation, and demonstrate that this model may at times be counterproductive. Supply-side conservation typically rests on the assumption that the market for wildlife commodities is characterised by perfect competition. The trade in some wildlife commodities is, according to Bulte and Damania (2005:1226), one example of an imperfectly competitive industry that is controlled by a relatively small number of criminal organisations or networks. These groups have the ability, to a certain extent, to set market prices by manipulating their own supplies. These traders are the crucial hinge between poachers and consumers, often illegally trafficking their commodity across borders, and typically earning supernormal profits. Bulte and Damania (2005:1232) admit that their main objective is not to negate the potential for captive breeding (and therefore legal trade) as a

conservation tool, but rather to sound a note of caution on its use. Simple 'rule of thumb' might not exist in the complex world of international trade in wildlife commodities.

't Sas-Rolfes (2012:14) is of the opinion that establishing an appropriately structured legal trading regime for rhino horn may provide a more effective and lasting solution to the rhino poaching problem, for three reasons:

- Firstly, it would bring trade out into the open. Market prices would be visible, thereby allowing for continued and accurate monitoring of ongoing consumer demand relative to supply. This would enable governments, conservationists and rhino owners to be far more immediately responsive to changing market conditions.
- Secondly, by providing a significantly increased and potentially ongoing source of supply, the incentives for speculative stockpiling by criminals would be greatly reduced, if not altogether removed. Furthermore, by meeting the demand at the highly inelastic and persistent "top end" of the market, the price of horn would almost certainly drop, perhaps quite drastically, thereby reducing the profitability of the illegal market and concomitant incentives for poaching and illegal trade.
- Thirdly, by becoming active market participants, legal suppliers of rhino horn gain a new source of income, which they are able to re-invest in improved protection and breeding. Legal owners and custodians also have a significant competitive advantage over

poachers and illegal suppliers: defensible legal rights and, in most cases, privileged physical access to, and control over, their stocks.

According to Biggs, Courchamp, Martin and Possingham (2013:1), a legal trade could simultaneously supply horns, fund rhino protection, and provide an incentive for the animals' sustainable use and long-term survival. These authors argue that evidence from other wildlife products suggests that a legal trade can reduce the incentive for poaching if (i) regulators can prevent the laundering of a threatening level of illegal supply under the cover of a legal trade; (ii) the legal supply can deliver the product (horn) more easily, reliably and cost-effectively than the illegal trade; (iii) the demand does not escalate to dangerous levels as the stigma associated with the illegality of the product is removed; and (iv) legally harvested horns from live animals can substitute for horns obtained from wild poached animals.

Fischer (2002) refers to a situation where two separate markets exist – legal and illegal, and argues that a characteristic of these markets is, *inter alia*, that laundering may bring illegal goods to legal markets when trade is allowed. According to Milliken and Shaw (2012:105), there are many instances of wildlife commodity trade where legal and illegal trades have existed in parallel, and where export, wholesale or retail dealers have had access to both sources of trade. Biggs *et al.* (2013:1) are of the opinion that technology exists to track the legality of individual horns, through the selling chain to the end consumer, to minimise laundering and the illegal trade. Each legal rhino horn traded can carry a small traceable transponder, and have a recorded DNA signature which remains identifiable through the market chain to the buyer. The fact that rhino horn will most likely change form into a generic,

nondescript powder in the end-use market, presents a further challenging dimension for the development of an effective identification, monitoring and law enforcement system that precludes laundering of illicit horn into the trade (Milliken & Shaw, 2012:105).

According to Child (2012), there are three counter-arguments to the allegation that legal trade will cover for illegal trade:

- Rhino horn has been banned for 35 years (since 1977), yet rhinos are still highly threatened; surely it is time to devise new approaches?
- Legalising the rhino horn trade in South Africa is likely to shift the market out of the hands of organised crime into legal channels, which must be good for rhinos and other wildlife currently moving through these illicit channels. A large and steady supply of horns is also likely to lower and stabilise prices, which also plays against the black market.
- Rhinos are most seriously threatened where proprietorship of them is weak, or where there are insufficient funds for law enforcement in protected areas.

't Sas-Rolfes (2012:14) refers to two arguments that have been raised against the legal trade option. The first argument is a hard-line ethical stance against any form of human interference with, or commercial exploitation of, rhinos, on the grounds of them being “wild” animals. This stance regards any form of rhino “farming” as abhorrent – an attitude that typically extends to the

dehorning of live, free-ranging animals. The author responds to this argument by stating that relatively few unmanaged or "wild" rhino populations remain; most are at least subjected to the soft exploitation of tourist viewing, as well as frequent veterinary intervention. Such ethical stances are neither objective nor absolute – they are subjective and relative. This stance is ultimately self-defeating if it results in the type of brutal treatment of rhinos that is being observed, simply because a compromising position is not accepted.

The second argument against legal trade is grounded in a concern that, if the ban were to be lifted, market size would grow significantly – to an extent even greater than can be provided by legal suppliers (Milliken & Shaw, 2012:105). According to 't Sas-Rolfes (2012:15), this scenario, while not completely impossible, is highly unlikely. For poaching to actually increase after lifting a ban, would necessitate a dramatic outward shift of the demand curve and/or a far more competitive cost function for illegal suppliers. 't Sas-Rolfes continues to discuss the likelihood of an outward shift in the demand curve. In the short term, the demand curve would shift outward after a ban was lifted, if previously law-abiding consumers decided to enter the market.

In the longer term, two other factors could lead to an outward shift in the demand curve: rising levels of income and aggressive product marketing by suppliers. Rising income levels are a factor, irrespective of whether the market is legal or not. Aggressive product marketing is probably easier in a legal market, but can also be addressed by measures that are far easier to establish in that environment than in an underground market ('t Sas-Rolfes, 2012:15).

Nadal and Aguayo (2014:10) are of the opinion that the pro-traders' argument relies on very stringent and highly unrealistic assumptions. Competition is presented as perfect competition, meaning that suppliers are price-takers, or it is presented in very rudimentary terms. Key agents in the supply chain are presented in many cases as crime syndicates, but no serious analysis is undertaken to unravel its economic logic.

Nadal and Aguayo (2014:16) then criticise the argument in favour of wildlife trade, in that it only holds logically within a neoclassical mindset, when competition is perfect (in the sense that suppliers are unable to set prices), supply is vertically integrated, laundering and stigma effects are non-existent, there is no product differentiation, and agents do not behave strategically. If any of these assumptions is relaxed, a legal trade would more likely stimulate poaching.

According to Duffy *et al.* (2013:12), critics point out that legalisation will not work as imagined, because of weak enforcement in range states and end-user markets that legalisation will result in a price drop, and therefore the economic returns will not be as predicted. A price drop could also result in many more consumers being able to afford rhino horn in Southeast Asia, and this may stimulate demand.

Some opponents of a legal trade in rhino horn have also raised concerns about the possible impact on rhinos in Asian and other African range states where they may be less well-protected, coupled with the risk that a significant parallel illegal market could develop. Sharing of some of the revenues from

rhino horn sales with other rhino range states has been mentioned as an option (Duffy *et al.*, 2013:12).

South Africa still needs to establish a credible trading partner. All the former rhino horn consuming countries in Asia, and also Vietnam, have effected legal bans against the trade, and most have moved to completely remove rhino horn as an approved ingredient in their traditional medicine. Any proposal to CITES to allow legal trade in rhino horn would require the identification of a trading partner in the form of a consumer interested in opening a legal rhino horn market, but to date there has been no clear indication of interest from any of the known end-user countries in Asia (Milliken & Shaw, 2012:105).

In order to consider the viability of legalised trade, it is important to have knowledge of current stockpiles, as well as potential future horn supplies. Rhino horn stockpile information is currently considered very sensitive in South Africa, due to the high risk of theft.

According to Taylor *et al.* (2014:64), the most recent estimate available for the total weight of rhino horn kept in registered stockpiles in South Africa (state and private) was 15,152 kg as at 31 December 2010.

Potential horn supplies are sourced from natural mortalities, break-offs and de-horning. Taylor *et al.* (2014:72) predicted that the potential minimum horn accumulation that could be acquired from all sources in 2014 would be 2,587 kilograms (Table 2.5). The maximum horn accumulation for 2014 would be 3,941 kilograms.

Table 2.5: Minimum and maximum future horn accumulation for all rhinos in South Africa.

Year	Horn mass (kg) from state white rhinos-natural mortalities	Horn mass (kg) from private white rhinos-natural mortalities	Horn mass (kg) from all black rhinos-natural mortalities	Horn mass (kg) from break-offs (both species)	Horn mass (kg) from de-horned white rhinos	Total annual horn mass (kg) accumulation
	25% recovery	75% recovery	25% recovery		National trade	Minimum
2012	388	221	16	37	1.677	2.339
2013	394	234	17	37	1.778	2.460
2014	401	248	17	37	1.884	2.587
2015	409	263	18	37	1.997	2.724
2016	416	278	19	37	2.117	2.867
2017	425	295	20	37	2.244	3.021
2018	434	313	21	37	2.379	3.184
2019	443	332	22	37	2.521	3.355
2020	453	351	23	37	2.673	3.537

Year	Horn mass (kg) from state white rhinos-natural mortalities	Horn mass (kg) from private white rhinos-natural mortalities	Horn mass (kg) from all black rhinos-natural mortalities	Horn mass (kg) from break-offs (both species)	Horn mass (kg) from de-horned white rhinos	Total annual horn mass (kg) accumulation
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	75% recovery	75% recovery	75% recovery		International trade	Maximum
2012	1.163	221	48	37	2.137	3.606
2013	1.182	234	50	37	2.265	3.768
2014	1.203	248	52	37	2.401	3.941
2015	1.226	263	55	37	2.545	4.126
2016	1.249	278	58	37	2.698	4.320
2017	1.274	295	61	37	2.860	4.527
2018	1.301	313	64	37	3.032	4.747
2019	1.329	332	67	37	3.214	4.979
2020	1.359	351	70	37	3.406	5.223

Source: Taylor *et al.* (2014:73).

The literature reveals different opinions pertaining to the effectiveness of the ban on international trade and the lifting of the ban, and promoters of the “sustainable use” approach will need a two-thirds majority vote in favour of the lifting of the ban on international trade.

CITES has a large number of parties (countries/states) – 180 as at 31 August 2014. Many of these countries do not have rhinos, yet they have to participate in any decision-making in this regard. The NGOs who are also part of the decision-making processes at the CoP, do not have any direct interest in rhinos from a monetary point of view. South Africa is home to 93,2% of white rhinos and 36% of black rhinos in Africa, yet South Africa has one vote at the CoP. These rhinos are kept by SANParks, Ezemvelo KZN Wildlife, provincial nature reserves and private rhino owners. The latter are the parties most affected by any decisions regarding trade in rhino horn, although they are not always afforded the opportunity to raise their views.

2.11 SUMMARY

This chapter dealt with the legal position pertaining to the protection of rhinos in South Africa, the role of international law, and measures implemented by the South African government.

The importance of wildlife conservation, and the reasons why species should be saved, were discussed. The concept of poaching, with the focus on commercial poaching and the poacher, as well as Mozambique's role in rhino poaching, were addressed. The effectiveness of certain strategies to stop/prevent poaching were also investigated.

Various authors' views on sustainable use, and the viability of legalising international trade in rhino horn, were evaluated. The effectiveness of the CITES ban on international trade in rhino horn (first research question) was also discussed in this chapter.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter gives a description and justification of the methodology, sampling and data collection techniques adopted in this study. Thereafter, analysis of the collected information is discussed.

This chapter concludes with a discussion of ethical considerations, validity and reliability, as well as the limitations to the study.

3.2 RESEARCH DESIGN

A research design is, according to Nieuwenhuis (2012:70), a plan or strategy which moves from the underlying philosophical assumptions to specifying the selection of respondents, the data gathering techniques to be used, and the data analysis to be carried out.

According to Saunders, Lewis and Thornhill (2009:5), the word 'research' has three characteristics: firstly, research is data that is collected systematically; secondly, research is data that is interpreted systematically; and thirdly, research has a clear purpose – namely, to find things out.

The classification of 'research purpose' most often used in research method literature, is the threefold one of 'exploratory', 'descriptive' and 'explanatory'. Exploratory research, according to Saunders *et al.* (2009:592), is research that aims to seek new insights into phenomena in a new light. Exploratory research can be conducted through a literature search and interviews with experts on the topic. Descriptive studies, on the other hand, intend to portray an accurate profile of persons, events or situations (Robson, 2002:59),

whereas explanatory studies emphasise studying a situation or a problem, in order to explain the relationships between variables (Saunders *et al.*, 2009:140).

In the light of the aforementioned, the exploratory study is deemed appropriate for this study. The choice of this research strategy was guided by the research questions and the objectives of the research.

Research can further be differentiated according to the research strategy that is chosen. According to Saunders *et al.* (2009:600), a research strategy is the general plan of how the researcher will go about answering questions or meeting research objectives. Research strategies can be divided into qualitative research, quantitative research and a mixed methods approach.

Leedy and Ormrod (2010:94) point out the following differences between a quantitative and qualitative approach:

- Quantitative research involves looking at amounts or quantities of one or more variables in some way, perhaps by using commonly accepted measures of the physical world (e.g. rulers, thermometers, oscilloscopes), or carefully designed measures of psychological characteristics or behaviours (e.g. tests, questionnaires, rating scales).
- Qualitative research involves looking at characteristics or qualities, that cannot easily be reduced to numerical values. A qualitative researcher typically aims to examine the many nuances and complexities of a particular phenomenon.

As far as the purpose of a specific research approach is concerned, quantitative researchers seek explanations and predictions that will generalise to other persons and places. Qualitative researchers seek a better understanding of complex situations (Leedy & Ormrod, 2010:95).

According to De Vos, Strydom, Fouche and Delpont (2011:312), the qualitative research design differs inherently from the quantitative design, in that it does not usually provide the researcher with a step-by-step plan or fixed recipe to follow. The term 'qualitative research' is an indication that this approach concentrates on the qualities of human behaviour – i.e. on qualitative aspects, and not quantitatively measurable aspects of human behaviour (Schurink, 2003:3).

According to Kara (2012:114), mixed method research is research that includes qualitative and quantitative elements, using both primary and secondary data. Mixed method research is described by Johnson and Onwuegbuzie (2004:17) as the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language, into a single study. According to Saunders *et al.* (2009:152), mixed method research uses both quantitative and qualitative data collection techniques and analysis procedures, either at the same time or one after the other, but does not combine the two techniques. This method has also been criticised. According to Gorard (2007:1), mixing methods is wrong – not because methods should be kept separate, but because they should not have been divided at the outset.

According to Marshall and Rossman (2006:54), the strengths of qualitative studies should be demonstrated for research that is exploratory or descriptive and that stresses the importance of context, setting and the participants' frame of reference. In qualitative research, according to Nieuwenhuis (2012:56), it is maintained that knowledge should emerge out of the local context, and privilege the voice of the "insiders", taking into account what people say, do and feel, and how they make meaning of the phenomena under investigation.

Patterns, trends and themes should therefore emerge from the research process, and the role of the researcher should be to understand real-life situations from the point of view of the insider, rather than from that of the outsider. It was for this reason that the methodology used in this study was of a qualitative nature. Rhino poaching is not a single faceted issue. It is complex, and interacts with all sectors of society – from rhino owners to local communities, rhino custodians and government.

Another reason for using the qualitative method was the need to corroborate, validate and explain the information that was collected during this study. According to Miles and Huberman (1994:10), qualitative research is useful when one needs to supplement, validate, explain or interpret the collected information.

According to Leedy and Ormrod (2010:137), qualitative research provides a means by which a researcher can judge the effectiveness of particular policies, practices or innovations. This is also one of the reasons why the

researcher decided on a qualitative research approach – more specifically, to answer the first two research questions:

- (i) Does the CITES ban on international trade in rhino horn provide an effective measure to stop or prevent poaching?
- (ii) Can the lifting of the ban on international trade in rhino horn discourage poaching and save the rhino from extinction?

Qualitative researchers typically rely on four methods for gathering information: (a) participating in the setting; (b) observing directly; (c) interviewing in depth; and (d) analysing documents and material culture (Marshall & Rossman, 2006:97).

Qualitative research acknowledges an interactive relationship between the researcher and the participants, as well as between the participants and their own experiences, and how they have constructed a reality based on those experiences (Nieuwenhuis, 2012:55); hence, interviews and questionnaires, combined with a desk-based study, have been chosen for the purposes of this research.

3.3 DATA COLLECTION STRATEGIES

Data was collected by means of semi-structured interviews, questionnaires and a desk-based study (literature review).

3.3.1. Interviews

According to Fontana and Frey (2000:655), interviewing involves individual, face-to-face, group interchange, mailed or self-administered questionnaires

and telephone surveys. These can be structured, semi-structured or unstructured in nature. Individual interviews represent the most widely-used data collection strategy in qualitative research (Sandelowski, 2002). Researchers typically choose individual interviews to collect detailed accounts of participants' thoughts, attitudes, beliefs and knowledge, pertaining to a given phenomenon (Fielding, 1994).

The aim of qualitative interviews is to see the world through the eyes of the participants, and can be a valuable source of information, provided they are used correctly (Nieuwenhuis, 2012:87).

Interviews are put into three general categories: the informal, conversational interview, the general interview guided approach, and the standardised, open-ended interview (Patton, 2002:341). The open-ended interview is based on an assumption fundamental to qualitative research: the participant's perspective on the phenomenon of interest should unfold as the participant views it (the emic perspective), not as the researcher views it (the etic perspective) (Marshall & Rossman, 2006:101). This type of interview usually requires the participant to answer a set of predetermined questions. It does allow for the probing and clarification of answers (Nieuwenhuis, 2012:87).

In this research, the exact wording and sequence of questions were determined in advance (questionnaire attached as Appendix A). All participants were asked the same basic questions in the same order. Questions were worded in a completely open-ended format. The researcher started with the more general questions, and included descriptive questions where participants had to give a general overview. Contrast questions were

also included, in order to encourage participants to compare certain perceptions. Evaluative questions guided the participants towards their own personal feelings regarding rhino poaching.

At first sight, questions 8, 9 and 16 appeared to be closed and quantitative in nature – which could have resulted in a mixed methods being used. However, the purpose of questions 8 and 9 was to determine whether rhinos are regarded, from the viewpoint of the owner, as an asset or a liability. The purpose of Question 16 (with sub-questions) was to determine whether rhino owners are prepared to participate in the compilation of a centralised database, and the kind of information that they are prepared to provide. The overall purpose of these questions was therefore of a qualitative nature.

According to Symonds and Gorard (2010:126), the traditional categorisation of the many different “tools”, “techniques” or “methods” for collecting data seems to be largely based on whether they create closed- or open-ended data. However, the idea of “closed” data should not be confined to the quantitative paradigm. The current assignment of closed- and open-ended data gathering methods into separate paradigms is based on their most common use, and not on their potential, or in some cases their actual, uses. Quantitative researchers tend to rely more on deductive reasoning, whereas qualitative researchers make considerable use of inductive reasoning. However, it is important to note that quantitative research is not exclusively deductive, nor is qualitative research exclusively inductive (Leedy & Ormrod, 2010:96).

The use of semi-structured interviews allows the views of different stakeholders to be put into play against each other, staging an indirect dialogue that produces more nuanced conversations.

Questions ranged from 'factual' questions that asked people to provide information, to 'opinion' questions that assessed their attitudes and preferences. The focus in this study was on both 'factual' and 'opinion' questions. As the participants consist of rhino owners and non-owners (e.g. NGOs), the latter were only required to respond to those questions relevant to themselves. Individual interviews were conducted with six (6) of the 18 participants. (The selection of participants will be discussed in section 3.4).

The researcher made use of a digital tape recorder, in order to record the interviews. These were transcribed at a later stage. Permission to use a tape recorder was obtained from each participant prior to the interview. The participants were given the option to stop the tape recorder at any stage. Notes were also taken, and compared with a transcript of the tape. The interviews followed a conversational mode (with the questionnaire as basis), which presented the opportunity for a two-way interaction between interviewer and participant.

According to Marshall and Rossman (2006:102), interviewers should have superb listening skills, and be skillful at personal interaction, question framing, and gentle probing for elaboration. The researcher is a practising attorney with extensive experience in interviewing and questioning. Participants were cooperative – especially the rhino owners, and were eager to impart their

knowledge. Two of the interviewees, however, objected to the use of the tape recorder.

An informal (face-to-face) interview was conducted with a representative of the South African Department of Environmental Affairs (DEA), as well as with the chief warden of one of the nature reserves in Botswana. During these interviews, and due to the nature of these interviews, the researcher deviated from the questions contained in the questionnaire. The purpose of these interviews was to obtain some background, with a view to conducting the research for this study.

Questionnaires were sent by email to those participants who could not be interviewed personally. It was not expected of participants to fill in their responses on the questionnaire and thereby limit the length of their respective responses. Participants did not have to write the answers down in given spaces on the questionnaire. No limitations were put on the length of their responses, except in those cases where the question specifically made provision for a short motivation.

According to McCallon and McCray (1975:17), some of the characteristics of a good questionnaire are as follows:

- The respondent should feel that the instrument will provide meaningful solutions to a problem, and should have a direct bearing on the research problem.
- The covering letter should be brief and inviting.

- The respondent should be motivated and persuaded to complete the questionnaire.
- Depending on the research problem, the questionnaire should be as short as possible.
- Unnecessary questions should be eliminated from the questionnaire.
- The questionnaire should be neat, professional and well structured.

The researcher made sure that the questionnaire in this study complied with the abovementioned characteristics.

The questionnaires were accompanied by a covering letter explaining the purpose of the research, as well as a consent form (copy of letter and form attached as Appendix B and Appendix C, respectively). According to Berdie and Anderson (1974:59), the covering letter should impress the respondent and motivate them. Participants were also telephoned beforehand and informed of the purpose of the research, as well as the background.

3.3.2 Desk-based study/literature review

According to Marshall and Rossman (2006:107), researchers supplement participant observation, interviewing and observation, with gathering and analysing documents produced in the course of everyday events, or constructed specifically for the research at hand. As such, the review of documents is an unobtrusive method, rich in portraying the values and beliefs of participants in the setting.

According to Leedy and Ormrod (2010:145), qualitative researchers often use multiple forms of data in any single study. They might use observation, interviews, objects, written documents, audiovisual material, electronic documents (e.g. email messages, Internet websites), and anything else that could help them answer their research question. Furthermore, many qualitative studies are characterised by an emerging design. Data collected early in the investigation often influences the kinds of data that the researcher subsequently gathers. In this research, the researcher used the collected data in order to frame the research problem as well as the research questions.

An extensive literature review was conducted on the topic. According to Nieuwenhuis (2012:82), it is important to distinguish clearly between the literature review of a study, and using documents as part of the data-gathering strategy. The two do overlap, in the sense that they both deal with data sources in some or other written format, but including document analysis as part of the data-gathering strategy is something distinct from the literature review. Hofstee (2006:121) refers to this technique as the extended literature review, a technique used to classify and relate various schools of thought and debates.

This stage of the research design involved a qualitative approach, to access the knowledge and opinions of stakeholders involved in conservation, as well as those who are affected by the ban on international trade in rhino horn.

Most of the NGOs did not want to participate in the research, hence the researcher had to rely on a literature research pertaining to the relevant NGOs' viewpoint on the subject.

3.4 SAMPLING

The researcher selected a sample which would be reliable and appropriate for this study. According to Leedy and Ormrod (2010:96), qualitative researchers are often described as being the research instrument, because the bulk of their data collection is dependent on their personal involvement (interviews, observations) in the setting, whereas in many quantitative studies it is statistical representivity that is sought. With qualitative studies, generalisability of results is frequently the target, and this can be achieved when the sample, in terms of content, represents the case being investigated (Flick, Von Kardoff & Steinke, 2004:167).

Sampling refers to the process used to select a portion of the population for study. According to Bailey (1994:96), purposive sampling is done when the researcher chooses only those respondents who have specific knowledge that best meets the purpose of the study. Qualitative research is generally based on non-probability and purposive sampling, rather than probability or random sampling approaches. Purposive sampling simply means that participants are selected because of some defining characteristics that make them the holders of the data needed for the study. Sampling decisions are therefore made with the explicit purpose of obtaining the richest possible source of information to answer the research questions. Purposive sample sizes should rather be determined on the basis of theoretical saturation (the point in data collection when new data no longer brings additional insights into the research question) (Nieuwenhuis, 2012:79). In qualitative research, credibility of the findings is not measured in terms of the number of participants, but in terms of the richness of the information gathered.

Typically, the sample is selected to represent some larger population of interest – the group of people or institutions that are the subject of the research (Clifford & Valentine, 2003:950). According to Green and Thorogood (2009:120), the experience of most qualitative researchers is that, in interview studies, little that is new comes out of transcripts after one has interviewed twenty or so people.

The following criteria, as mentioned by Flick *et al.* (2004:169), was applied in the selection process for this research:

- They had available the knowledge and experience that the researcher needed.
- They were capable of reflection.
- They were articulate.
- They had time to be interviewed (or to respond to the questionnaire).
- They were willing to take part in the investigation.

The sample in this study was not taken according to the principle of randomness, as this kind of sample would have led to results based on emotions only. In this study, stakeholders in nature conservation, rhino owners and NGOs were chosen – specifically those who had a direct interest in the conservation of rhinos.

According to Flick *et al.* (2004:167), the investigation should involve not only favourable cases that confirm the existing state of one's knowledge, but also unfavourable or critical cases. It must be guaranteed that different viewpoints are represented, and that the participants show themselves to be well informed.

Prior to the selection of a sample, the literature review in Chapter 2 already revealed different viewpoints. It is not always possible to predict the viewpoint of a specific participant, as it can only be established after the interview or after analysing the questionnaire. However, the viewpoint of an organisation such as the PROA and most of the NGOs, could be established by means of a press release or policy documents. Participants were not selected on the basis of a specific viewpoint that they might have had, but on the basis that they had an interest in the conservation of rhinos.

Further, in order to comply with the requirement of presenting different viewpoints, a literature research was conducted by the researcher.

Although only eighteen (18) participants participated in this study, they represented the owners and custodians of approximately 80% of the rhinos in South Africa. With this sample, in combination with the literature review, the requirement of generalisation would be achieved.

The sample structure for this study is represented in Table 3.1 below. As rhino poaching is a very sensitive issue, the researcher cannot reveal the specific number of rhinos per rhino owner or custodian.

Table 3.1: Sampling structure of participants.

A senior representative from SANParks.	1
Chairperson of the Private Rhino Owners Association (South Africa), an organisation representing approximately 500 private rhino owners in South Africa.	1
A representative of Wildlife Ranching South Africa.	1
Three representatives from organisations involved in conservation of rhinos.	3
A representative from an organisation involved in conservation in general (rhinos included).	1
Senior representatives from two provincial nature conservation authorities in South Africa.	2
Six private rhino owners.	6
The manager of a game reserve on the western boundary of the KNP and chairperson of Game Reserves United.	1
The manager of a private game reserve.	1
A representative from an NGO.	1
TOTAL	18

A number of NGOs involved in conservation were approached. Most of the NGOs did not even respond to the request to participate. However, the CEO of one of the leading NGOs in nature conservation responded as follows (the response is an indication of the extent of the questionnaire that was used for this research): *“I have looked at the questionnaire but simply haven’t got the time to reply as it will take me several days to reply in full. Also, a lot of what you are asking for cannot be answered in simple terms and the issues speak to complete EWT policies and positions, some of which are under development. I am afraid that there is simply just too much information required and it would be like me writing a thesis to cover everything that you have raised. I am also not able to reply to some questions due to my role as member of the Committee of Inquiry. I wish you luck with the thesis and am sorry that we cannot help”*.

For this reason, the researcher had to rely on policy (and other) documents, to determine the views of some of the NGOs which did not participate in the study.

3.5 LIMITATIONS

According to Marshall and Rossman (2006:42), all proposed research projects have limitations; none is perfectly designed. One of the challenges that the researcher encountered was the reluctance of NGOs involved in nature conservation, to participate. Also, many of the private rhino owners were reluctant to participate, as they were afraid that sensitive information regarding their specific situation could be revealed.

It was difficult to arrange for interviews with some of the participants, due to long distances and time constraints. The researcher travelled approximately 2,520 km in order to conduct interviews. A telephone conference was conducted with one of the participants situated in Cape Town.

Credibility and quality of findings are often questioned in qualitative research studies. These aspects will be addressed in section 3.7.

3.6 DATA ANALYSIS

Analysis involves breaking up the data into manageable themes, patterns, trends and relationships. The aim of analysis is to understand the various constitutive elements of one's data through an inspection of the relationships between concepts, constructs or variables, and to see whether there are any patterns or trends that can be identified or isolated, or to establish themes in the data (Mouton, 2001:108).

In qualitative research, the researcher usually works with descriptive data, collected through methods such as interviews and document analysis. The research strategy is usually of a contextual nature. According to Mouton (1996:169), this implies a focus on the individual case in its specific context of meanings and significance. Analysis in these cases means reconstructing the inherent significance structures and the self-understanding of individuals, by staying close to the subject. The overall coherence and meaning of the data is more important than the specific meanings of its parts. This leads to the use of methods of data analysis that are more holistic, synthetic and interpretative.

According to Marshall and Rossman (2006:154), qualitative data analysis is a search for general statements about relationships and underlying themes. The variety of approaches (including ethnography, narrative analysis, discourse analysis and content analysis) correspond to different types of data, disciplinary traditions, objectives and philosophical orientations. Because each qualitative study is unique, the analytical approach used will be unique.

For the purposes of this study, the researcher decided on a qualitative content analysis – which has been defined as follows:

- (i) It is a detailed and systematic examination of the contents of a particular body of material, for the purpose of identifying patterns, themes or biases (Leedy & Ormrod, 2010:144).
- (ii) Content analysis is used to refer to any qualitative data-reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings (Patton, 2002:453).
- (iii) Qualitative content analysis involves a process designed to condense raw data into categories or themes, based on valid inference and interpretation. This process uses inductive reasoning, by which themes and categories emerge from the data through the researcher's careful examination and constant comparison (Zhang & Wildemuth, 2005:1).

The basic idea of qualitative content analysis consists of maintaining the systematic nature of content analysis for the various stages of qualitative

analysis, without undertaking over-hasty quantifications (Flick *et al.*, 2004:266).

Content analysis usually refers to analysing text (interview transcriptions or documents). With deductive analysis, the data is analysed according to an existing framework in contrast with inductive analysis, where findings emerge out of the data, through the analyst's interactions with the data.

Zhang and Wildemuth (2005:2) refer to three approaches to qualitative content analysis, based on the degree of involvement of inductive reasoning. The first is conventional qualitative content analysis, in which coding categories are derived directly and inductively from the raw data. This is the approach used for grounded theory development. The second approach is directed content analysis, in which initial coding starts with a theory or relevant research findings. Then, during data analysis, the researcher immerses himself in the data and allows themes to emerge from the data.

The purpose of this approach is usually to validate or extend a conceptual framework or theory. This approach has been followed in this research, as two basic theories have already been identified, namely (a) that the trade ban is an effective method to prevent poaching (anti-trade), and (b) that the trade ban is not effective in preventing poaching (pro-trade). The third approach is summative content analysis, which starts with the counting of words or manifest content, and then extends the analysis to include latent meanings and themes.

3.6.1 Strengths and limitations of qualitative content analysis

Flick *et al.* (2004:269) mention the following strengths and limitations of qualitative content analysis:

- (i) As a rule, the systematic nature of qualitative content analysis follows established sequential models. This renders the procedure transparent, intelligible, easy to learn, and readily transferable to new research questions.
- (ii) There is normally a system of categories at the centre of the analysis, but this is revised in the course of the analysis by means of feedback loops, and is adapted flexibly to the material.
- (iii) Its rule-governed procedure also allows for the better implementation of quality criteria and inter-coder reliability.

However, if the research question is very open, or the study is of a markedly exploratory character, and would also be hampered by an inductive formation of categories, or be incapable of conclusive theoretical justification, then more open procedures would be more appropriate – such as those found in grounded theory.

Qualitative data is complex, and not readily convertible into standard measurable units of objects seen and heard. It varies in level of abstraction, in frequency of occurrence, and in relevance to central questions in the research (Marshall & Rossman, 2006:155). In this study, the researcher also used the research questions, the objectives of the study, and the related literature, as guidelines for data analysis.

Analysis will be sufficient when critical categories are defined, relationships between them are established, and they are integrated into an elegant, credible interpretation.

3.6.2 The process of qualitative content analysis

Depending on the goals of a study, content analysis may be more flexible or more standardised, but, according to Zhang and Wildemuth (2005:3), it can be divided into the following steps:

(i) Prepare the data

According to Zhang and Wildemuth (2005:3), data needs to be transformed into written text before analysis can begin. Content analysis is most often used to analyse interview transcripts, in order to reveal or model people's information-related behaviours and thoughts.

In this study, data generated during the interviews has been transcribed (transformed into written text). In the case of participants who filled in questionnaires, the latter were already in written form. The same applies to the literature.

The researcher then organised the data in the form of a table, where the relevant questions appeared in the first column, the participant's responses to the questions in the second column, and general comments in the third column.

(ii) Generating categories

Qualitative content analysis usually uses individual themes as the unit of analysis, rather than the physical linguistic units. According to Zhang and Wildemuth (2005:3), an instance of a theme might be expressed in a single word, a phrase, a sentence, a paragraph, or an entire document. When using a theme as a coding unit, the researcher is primarily looking for the expressions of an idea.

Themes are common trends or ideas that appear repeatedly throughout the data. Themes come both from the data (an inductive approach) and from the researcher's prior theoretical understanding of the phenomenon under study (an *a priori* approach) (Ryan & Bernard, 2003:85).

A priori codes can be identified from a range of sources:

- Previous research or theory
- Research or evaluation questions the researcher is addressing
- Questions and topics from the interview schedule/questionnaire

Even with a fixed set of open-ended questions, one cannot anticipate all the themes that arise, before analysing the data. It is at this stage where the grounded theory has a role to play in discovering new themes in what grounded theorists call 'open coding' (Ryan & Bernard, 2003:88).

The researcher aimed to have a preliminary model or theory, and generate an initial list of coding categories from the model or theory. This model or theory would be modified within the course of the analysis as new categories emerged inductively.

(iii) Coding data

Coding data is the formal representation of analytic thinking. Codes may take several forms – for instance, abbreviations of keywords, coloured dots and numbers (Marshall & Rossman, 2006:160). In this study, coloured dots were used. Because coding proceeded while new data continued to be collected, it became possible for new themes and concepts to emerge and be added to the coding manual.

(iv) Assessing coding consistency

The consistency of coding needs to be rechecked. According to Zhang and Wildemuth (2005:5), it is not safe to assume that if a sample was coded in a consistent and reliable manner, the coding of the whole corpus of text is also consistent. Human codes are subject to fatigue, as humans are likely to make more mistakes as coding proceeds.

(v) Interpretation of data

Interpretation brings meaning and coherence to the themes, patterns and categories. According to Patton (2002:480), interpretation means attaching significance to what was found, making sense of the findings, offering explanations, drawing conclusions, extrapolating lessons, making inferences, considering meanings, and otherwise imposing order. Part of this phase is evaluating the data for its usefulness and centrality (Marshall & Rossman, 2006:162).

In this study, the data was analysed in order to obtain a better understanding of the circumstances that caused the increase in rhino poaching. In other

words, the arguments of the two “schools of thought” were analysed (document analysis) and compared to the opinions of various stakeholders, in order to formulate a proposal on how to save South Africa’s rhino population.

3.7 VALIDITY AND RELIABILITY

3.7.1 Introduction to the concepts of validity and reliability

Both quantitative and qualitative researchers need to test and demonstrate that their studies are credible. According to Patton (1999:1190), the credibility issue for qualitative inquiry depends on three distinct but related inquiry elements:

- Rigorous techniques and methods for gathering high-quality data, that are carefully analysed, with attention to issues of validity, reliability and triangulation.
- The credibility of the researcher – which is dependent on training, experience, track record, status, and presentation of self.
- Philosophical belief in the value of qualitative inquiry.

According to Golafshani (2003:600), while credibility in quantitative research depends on instrument construction, in qualitative research the researcher is the instrument. Although reliability and validity are treated separately in quantitative studies, these terms are not viewed separately in qualitative research.

The key validity criterion for data collection is “reliability”. According to Mouton (1996:144), this is the requirement that the application of a valid measuring instrument to different groups under different sets of circumstances, should lead to the same observations. Validity and reliability of data refers to the accuracy of the research findings. The meanings emerging from the data have to be tested for their plausibility, sturdiness and confirmability – that is, their validity. Otherwise one is left with interesting stories about what happened, of unknown truth and utility (Miles & Huberman, 1994:11).

Since there can be no validity without reliability, a demonstration of the former is sufficient to establish the latter (Lincoln & Guba, 1985:316). According to Golafshani (2003:601), reliability and validity are conceptualised as trustworthiness, rigour and quality in a qualitative paradigm.

In qualitative research, the researcher is the data-gathering instrument. Thus it seems, when qualitative researchers speak of research “validity and reliability” they are usually referring to research that is credible and trustworthy (Nieuwenhuis, 2012:80).

According to Morse, Barrett, Mayan, Olson and Spiers (2002:17), it is time to reconsider the importance of verification strategies used by the researcher in the process of inquiry, so that reliability and validity are actively attained, rather than proclaimed by external reviewers on the completion of the project. These strategies include, *inter alia*, investigator responsiveness, methodological coherence, sampling adequacy, an active analytic stance, and saturation. These strategies, when used appropriately, force the researcher to

correct both the direction of the analysis and the development of the study, as necessary, thus ensuring reliability and validity of the completed project.

3.7.2 Testing validity and reliability in this research

As mentioned in section 3.7.1, verification strategies, in order to ensure reliability and validity of data, are activities such as ensuring methodology coherence, sampling adequacy, and an active analytic stance.

The researcher's intention was to ensure congruence between the research questions and the components of the method. According to Morse *et al.* (2002:18), the interdependence of qualitative research demands that the research question match the method – which matches the data and the analytic procedures.

The researcher selected an appropriate sample consisting of participants who best represented, or had knowledge of, the research topic. This ensures efficient and effective saturation of categories, with optimal quality data and minimum loss (Morse *et al.*, 2002:18).

Sampling adequacy, evidenced by saturation, supplemented by a literature review, means that sufficient data to account for all aspects of the research, has been obtained. The researcher took cognisance of the fact that there were different viewpoints. These viewpoints were compared with data collected during the literature review, in order to ensure validity.

The lack of responsiveness of the researcher at all stages of the research process is, according to Morse *et al.* (2002:18), the greatest hidden threat to validity, and one that is poorly detected using *post hoc* criteria of

“trustworthiness”. As a possible lack of responsiveness might have been due to a lack of knowledge, the researcher conducted an extensive literature review, in order to acquaint himself with the research topic.

Triangulation was mentioned in section 3.7.1. According to Patton (1999:1197), triangulation is a process by which the researcher can guard against the accusation that a study’s findings are simply an artifact of a single method, a single source, or a single investigator’s bias. Triangulation is defined by Creswell and Miller (2000:126) as a validity procedure where researchers search for convergence among multiple and different sources of information, in order to form themes or categories in a study; therefore, triangulation is, typically, a strategy for improving the validity and reliability of research or evaluation of findings.

One type of triangulation that contributes to verification and validation of qualitative analysis, is to examine the consistency of different data sources within the same method – that is, triangulation of sources. This means comparing and cross-checking the consistency of information derived at different times and by different means within qualitative methods – for instance, comparing the perspectives of people from different points of view (Patton, 1999:1195). This type of triangulation was utilised by the researcher in this study.

According to Heyink and Tymstra (1993:297), making use of literature establishes the validity of qualitative research by validating the correctness of the findings. Literature is also used to point out the differences between research findings and the reasons for these differences. The researcher

conducted an extensive literature research; therefore, literature was also used to supplement and evaluate the research findings.

The researcher strove to produce findings that would be believable and convincing, by also presenting negative or inconsistent findings, in order to add to the credibility of the study.

According to Patton (1999:1198), there can be no definite list of questions that must be addressed, in order to establish investigator credibility. The principle is to report any personal and professional information that may have affected data collection, analysis and interpretation, either negatively or positively. The researcher in this study is a member of the Game Rangers Association of South Africa, the Field Guide Association of South Africa, and Wildlife Ranching South Africa. However, the researcher did not represent any of the aforementioned organisations for the purposes of this research.

The researcher has a keen interest in nature conservation and, in addition to qualifications in law, obtained an MPhil in Wildlife Management. The researcher is also a practising attorney, with extensive experience in interrogation techniques. As jurist, the researcher is well trained in the principles of objectivity.

3.8 ETHICAL CONSIDERATIONS

According to the Helsinki Declaration of 1972, it is imperative to obtain clearance from an ethics committee when human (or animal) subjects are involved in any kind of research of an empirical nature. Unisa has a strict policy on ethics, and this research has adhered to that policy.

Any researcher has the right to search for the truth, but this cannot be done at the expense of the rights of other individuals in society (Mouton, 2001:239). According to Vermeulen (1998:17), participants in research projects have the right to remain anonymous, as well as to expect that their personal information will be treated confidentially.

Before conducting the interviews, it was reiterated that the data would be viewed as confidential. The participants nevertheless gave permission for their names to be mentioned as having taken part in the study. Those who were interviewed gave permission for the interviews to be recorded. They were, additionally, given the choice to stop the tape recording or to withdraw from the interview, at any point. Two of the interviewees did object to the use of a tape recorder.

3.9 SUMMARY

This chapter presented an overview of the methodology used in this study, with specific reference to the research design and data collection strategies. Interviews and a desk-based study, as data collection strategies for this research, were discussed, whereafter the issue of sampling was addressed. The process of data analysis was also detailed, as well as the limitations and ethical considerations of the research.

The following chapter, Chapter 4, presents the analysis and findings resulting from the research process.

CHAPTER 4: RESEARCH FINDINGS

4.1 INTRODUCTION

This chapter presents the results derived from the semi-structured interviews, questionnaires, literature review, and also the policy documents of certain NGOs.

The problem statement and the research questions were used as a basis, in order to draft the questionnaire. It was mentioned in Chapter 3, that the questionnaire was also used as a basis for the interviews – i.e. the participants were posed the questions contained in the questionnaire; the exact wording and sequence of questions were used.

Participants were given the opportunity to elaborate on their responses. It was mentioned in Chapter 3 that, even with regard to the questionnaires, it was not expected of participants to fill in their responses on the questionnaire and thereby limit the extent of their responses. No limitations were put on the length of their responses, except in those cases where the question made provision for a “short motivation”. Interviews took approximately two hours each.

The research questions, as well as the objectives of the study, were used to identify four categories for the purposes of analysis, namely –

- (i) Reasons for the increase in rhino poaching
- (ii) Concurrent strategies/techniques
- (iii) The CITES trade ban

(iii) Possible solutions

The division of categories into themes and sub-themes is illustrated in Table 4.1:

Table 4.1: Categories, themes and sub-themes.

<u>Category</u>	<u>Theme</u>	<u>Sub-theme</u>
Reasons for the increase in rhino poaching	1. Poor law enforcement 2. Moratorium and norms and standards 3. Trade ban 4. Money driven (lucrative business) 5. Increased demand 6. Socio-economic reasons	1.1 Corruption 1.2 Lack in capacity and equipment 1.3 Suitable punishment 6.1 Poverty and unemployment
Concurrent strategies/techniques	1. Dehorning 2. Poison 3. Translocation 4. Increased security 5. Demand reduction	
CITES trade ban		
Possible solutions	1. Sustainable use	1.2 Legal trade 1.3 Trading partner 1.4 Centralised database

		1.5 Laundering of illegal horn 1.6 Negative impacts 1.7 Demand 1.8 Community conservation
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The data was coded, using themes and sub-themes, and fitted into pre-existing categories. The research adopted a theory-testing approach, and, in accordance with the qualitative research design, the researcher was the primary instrument for data collection and analysis.

The remainder of this chapter presents the data obtained from the six (6) interviews and twelve (12) questionnaires, as well as the relevant literature.

4.2 CATEGORIES

Four categories were identified beforehand, namely (i) reasons for the increase in rhino poaching; (ii) concurrent strategies/techniques to prevent poaching; (iii) the CITES trade ban; and (iv) possible solutions.

The aforementioned categories will be discussed separately.

4.2.1 Reasons for the increase in rhino poaching

It is important to investigate and analyse this category, as it is important to link the reasons for rhino poaching to possible solutions.

It must also be borne in mind that section 4.2.1 does not only relate to the reasons for poaching in general, but rather to the reasons for the “increase in

poaching of rhinos”. Poaching, as such, has been part of society for years. The focus of section 4.2.1 is therefore on the “increase in poaching of rhinos”.

The various responses of the participants were in line with the views of experts on this topic. Knight (2015:11-12), for instance, said that poaching is being driven by a complex mixture of the following:

- Increasing illegal demand for rhino horn in newfound markets in Southeast Asia, mainly Vietnam;
- Cooperation and support by some unscrupulous South African wildlife ranchers, veterinarians, outfitters and professional hunters who have colluded with Asian nationals to make rhino horn illegally available;
- The close proximity of Mozambique, which is awash with many poor, unemployed, trained and armed ex-combatants after years of civil war, together with an inadequate law enforcement system that is compromised by rampant corruption;
- Increasing numbers of wealthy individuals and increasing disposable income in some Southeast Asian countries have coincided with a large increase in the price of rhino horn, fuelling poaching;
- The involvement of well-organised transnational criminal networks has made the business of illegal trading in rhino horn into a multimillion-dollar industry;
- Declined efficiency and corruption in the South African law enforcement and conservation establishment.

4.2.1.1 Poor law enforcement

Although the interviews (and questionnaires) started with the question: “ ... what is the reason for the increase in rhino poaching?”, the literature research had already revealed that poor law enforcement could be one of the reasons for an increase in rhino poaching in South Africa. The researcher therefore asked more direct questions relating to law enforcement (questions 2, 6, 11 and 12), in order to determine the participants’ responses to these questions. Therefore, in order to give a proper evaluation of the issue of law enforcement, it was imperative to investigate the participants’ responses to questions 2, 6, 11 and 12 all together, as part of this category.

Poor law enforcement was indicated by most of the participants as a cause of the increase in rhino poaching, although only two of the participants indicated that it is the most important cause of the increase. Other reasons were also given, which will be discussed in sections 4.2.1.2 to 4.2.1.5.

Even the various responses to Question 2, which did not refer directly to law enforcement, revealed that most of the participants were of the opinion that law enforcement plays an important role. Question 2 reads as follows: “The current global approach to fighting illicit wildlife trafficking is failing? If yes – what do you think is the reason for this failure?” The majority (12) of the participants put the blame on poor law enforcement.

On the question of “whether increased law enforcement can limit the poaching of rhinos”, the majority (11) of the participants were of the opinion that increased law enforcement can limit poaching.

When the question was asked “whether our legal system is effective enough to deal with poaching”, the majority (10) of the participants indicated that the legal system is not effective enough.

On the question “whether the punishment fits the crime and if stricter sentences could deter potential poachers”, the majority (11) of the participants indicated that the punishment does not fit the crime, and that stricter sentences could deter potential poachers. By asking this question, it is almost like putting the participant in the shoes of the poacher.

Participants, however, differed with regard to their views, hence the opinions of the minority will also be discussed in this chapter.

In order to discuss “law enforcement”, it is also important to refer to the definition of “wildlife trafficking”. According to Wyatt and Cao (2015:5), wildlife trafficking is a multi-stage crime that, because of the focus on animals, begins with the poaching or capture of the target animal. They must then be transported by smuggling, or other fraudulent means, to the location where they will be sold. Depending upon the animal, or any part of the animal, and if they are alive or not, this involves multiple people, different forms of transportation, and various techniques for hiding the animal or animal part.

For the purposes of this research, the theme “poor law enforcement” has been divided into three sub-themes, namely (i) corruption; (ii) lack in capacity and equipment; and (iii) suitable punishment. The aforementioned sub-themes emanated from the interviews and the questionnaires:

- (i) Corruption

Corruption was mentioned as a concern by 12 participants, hence there are worrying signs that corruption remains a challenge to effective law enforcement. This concern is also reflected in the relevant literature.

According to Douglas and Alie (2014:275), economic under-performance and poor governance make the resource wealth of many developing countries vulnerable to patronage and corruption. Lemieux and Clarke (2009:463) are of the opinion that where corruption is highest, trafficking is pervasive. According to Wyatt and Cao (2015:9), there is a range of corrupt actors, such as the military, police, border guards, judiciary, custom officials, embassy staff and state diplomats. Criminal organisations and exporters have enough money to bribe rangers, customs officers and police officers, in order to obtain false documents which make it appear that the poached wildlife is legal.

Corruption facilitates the range of transactions that need to happen throughout the trafficking process. This includes all the connections between the supply, transit and demand countries (WWF/Dalberg, 2012:14).

Vietnamese diplomatic officials in South Africa have been implicated in illegal rhino horn trade. In one instance, a Vietnamese employee in South Africa was caught on tape conducting rhino horn trade in front of the Vietnamese embassy in Pretoria. Vietnamese government officials also have served as “conduits’ for rhino horn between Africa and Vietnam (Environmental Investigation Agency, 2013:6). The aforementioned is also reflected in the participant’s perceptions of officials – for instance:

“ . . . big money is made, big bribes to officials happen” (P8)

The role of corruption and organised crime in rhino horn and ivory trafficking is so significant, that Interpol launched Operation Worthy in 2012 to combat trafficking and poaching in Africa. A key element of Operation Worthy was building national inter-agency cooperation through National Environmental Security Task Forces, which brings together representatives of police, customs, environmental agencies, revenue departments, transport, health agencies, prosecutors and Interpol. Countries which participated in Operation Worthy were Ethiopia, Botswana, Ghana, Guinea, Kenya, Liberia, Mozambique, Nigeria, Ruanda, South Africa, Swaziland, Zambia and Zimbabwe (Duffy & St John, 2013: 6).

According to Wyatt and Cao (2015:6), several researchers have noted the involvement of organised crime in wildlife trafficking, and state that organised crime is closely tied to corruption. The corruption of government officials is essential to the transnational smuggling and flow of illegal goods. It has been pointed out that corruption itself is not the driver of wildlife trafficking; however, poor governance and corruption are commonly linked to this environmental crime as primary facilitators of its increase and existence. Poaching tends to thrive in places where corruption is rife, government enforcement is weak, and where there are few alternative economic opportunities (Wyatt & Cao, 2015:7). This is also in line with the view of the participants:

“ . . . good organised crime syndicates too clever for corrupt police system. Corrupt police must be removed” (P1)

“ . . . our (South Africa) record of corruption is too high” (P2)

According to the Global Corruption Barometer (Heyman & Dell, 2012), 62% of people in South Africa feel that between 2007 and 2010, the level of corruption in the country had increased. It has also been found that 45% of the people in South Africa feel that the government's efforts to fight corruption is ineffective. According to Thomson (2012:3), corruption has undeniably contributed to the significant rise in poaching.

Another concern raised by the participants was the involvement of officials in supplying information:

“Officials handling permits, are suspects in supplying information” (P3)

“. . . the integrity of officials is seriously under suspicion. Corruption is a problem” (P13)

The qualitative data confirms the findings of the literature pertaining to the role of corruption in wildlife trafficking and poaching. Most of the participants put the blame on officials employed by provincial nature conservation departments/agencies in South Africa. There is a clear lack of trust in these departments/agencies, and participants referred to the theft of a vast amount of rhino horn from the offices of the Mpumalanga Tourism and Parks Agency. They also referred to the involvement of SANParks rangers and traffic officers in poaching in the Kruger National Park.

Even bribery and corruption in South Africa's neighbouring countries were raised as a concern – especially in Mozambique.

(ii) Lack in capacity and equipment

South Africa and Kenya have both experienced a general rise in the proportion of horn entering illegal trade. This is indicative of the enforcement challenges following increased organisation of illegal horn-trading networks and, possibly, capacity shortages within some conservation authorities (Milledge, 2007:104).

In 2012, the Portfolio Committee on Water and Environment Affairs (South Africa) called a parliamentary hearing in Cape Town, in order to discuss rhino poaching. The meeting was attended by a range of government and provincial representatives, as well as NGOs and concerned individuals. Several common threads were identified, including the need for better communication and collaboration between government departments in South Africa, and improved permitting and database systems for live rhinos and rhino horn stockpiles (Save the Rhino International, 2012).

Participants was in agreement that there is a need for an increased number of arrests, prosecuting, and stiffer sentencing for rhino-related crimes. Many of the participants expressed concern about capacity shortages and constraints to achieve the above and combat the poaching threat.

“Lack of equipment” was mentioned by only one participant (P3). However, according to a policy perspective statement of the Wilderness Foundation (Wilderness Foundation South Africa, 2012), protection of rhinos in state-owned parks and reserves is far from adequate, due to budget constraints for specialised anti-poaching equipment, logistical support (vehicles and other supplies) and adequately trained personnel. Most of the anti-poaching efforts

have been financed by public support, as conservation budgets have not increased, or else very little has been allocated specifically to rhino protection.

“Lack in capacity” was raised as a concern by 12 of the participants. Seven (7) of the participants mentioned a “lack in capacity” more than once. Staff responsible for law enforcement were mostly blamed by participants:

“Poor investigations by law enforcement officers” (P1)

“Lack in capacity of environment departments (staff). Cases drag too long” (P2)

“The lack of law enforcement” (P6, 8, 9, 10, 11, 12, 13 and 14)

“Too many delays and postponement of cases” (P2)

“We do not think that all the people in the legal system know and realise the impact and consequences of the likelihood that a species can disappear from the earth. People in these systems need to be educated and kept informed of the magnitude of rhino poaching” (P5)

“I suggest that they train a specialised task team to take responsibility for rhino-related cases – from the officer who arrests the poacher, the prosecutor and the magistrate” (P10)

“The problem is the incapacity of prosecutors and magistrates” (P14)

Some of the participants were of the opinion that the problem lies with the government in not making provision for the necessary finances to fill vacancies, and a lack of political will:

“ . . . political apathy, reduced funding for conservation and law enforcement. An environmental court should be established to deal with endangered species cases” (P2)

“Fragmentation/different departments/institutions dealing with poaching. If one unit works on the illegal wildlife issues, the situation will be better” (P3)

“. . . the risk to be caught is very low, due to the high vacancy rate at conservation enforcement agencies. Enforcement is not properly financed according to the extent of the problem. A contributing factor is the high vacancy rate and lack of experienced investigators. Properly staffed and budgeted enforcement can stem the tide of poaching” (P5)

“There is not adequate domestic and international collaboration and cooperation. Government tends to be very slow in responding, while criminal syndicates can act within minutes” (P6)

“Our legal system is a failure” (P7)

“Our legal system is not good for poaching – radical improvement is needed” (P8)

“The strategy of crime syndicates is to focus on those places with the minimum risk to be caught. Previously, due to military activities on South Africa’s border, the risk to be caught was high” (P16)

The aforementioned is also in line with the view of Wyatt and Cao (2015:6), namely that one of the reasons why developing countries struggle to combat the illegal wildlife trade, is the lack of resources, including very few law enforcement officers dedicated to policing wildlife trafficking. In this respect,

WESSA has, in its position statement on rhino poaching in South Africa (WESSA, 2013:2), identified certain key areas which need to be strengthened at all levels (government and the private sector), in order to address the lack in capacity:

- More coordinated and focused efforts and use of resources to fight poaching (i.e. less fragmented and more efficient approach).
- Good selection process – people are employed with the right qualification, skills and attributes for their job.
- Appropriately trained and resourced people in place to deal with this information.
- Increased capacity to deal with the situation at all levels – from field rangers through to forensic specialists.
- A more efficient judicial system where rhino poaching is elevated in significance, in terms of prosecution time and sentences.
- Better prepared prosecutions – this includes better trained legal personnel who are better prepared as a result of better crime scene management and investigations.
- Improved monitoring and legal enforcement.
- Greater political will to bring rhino poaching to an end.

According to Duffy and St. John (2013:8), evidence indicates that reducing effort devoted to enforcement within protected areas leads to increased levels of poaching. Fifty years of records from Serengeti, Tanzania, show that the

rapid decline in enforcement in 1977 resulted in large increases in poaching and the decline in many species. From the mid-1980s, expanded budgets allowed for increased anti-poaching patrols; as a result, poaching was greatly reduced, and populations of buffalo, elephant and rhino showed signs of recovery.

According to Milledge (2007:103), a combination of adequate legislation, capacity and implementation of appropriate enforcement strategies, is needed to successfully prevent and respond to rhino crimes.

In South Africa, despite the adaptation of seemingly better legislation after 2005, better policing did not follow, as the Threatened Species Unit of the SAPS was disbanded. Specialised knowledge and coordination in provincial governments where application of conservation laws takes place, also became fragmented because of a lack of applicable capacity (Du Toit, 2013a:98).

Not everyone was in agreement that increased law enforcement would necessarily limit poaching, as one participant stated the following:

“Law enforcement and policing within a conservation environment i.e. both inside and outside of the protected area, is essential but requires significant and sustained resources to respond to the current levels of poaching. This is not feasible given the limited budgets allocated to conservation management. It is evident that increased and concentrated law enforcement efforts in places like Kruger National Park have not reduced poaching. Traditional law enforcement practices are thus ineffective” (P18)

(iii) Suitable punishment

It is a cause of intense frustration all over the African continent that when poachers or the middlemen driving the trade are arrested, they are frequently released, because cases against them were poorly prepared. More often than not, the penalties for poaching amount to no more than a "slap on the wrist", and in the absence of a significant deterrent, the same individuals continue their activities as if nothing has happened (Hanks, 2015b:6). Eustace (2011:1) suggests that there is a 90% chance of a poacher avoiding any penalty.

It was stated in section 2.6.5 that, in South Africa, the number of rhino-related arrests and convictions with deterrent custodial sentences without the option of a fine, has increased. However, there is no proof that the aforementioned has been conducive towards deterring poachers.

On the question whether the "punishment fits the crime", 11 of the participants were of the opinion that the punishment does not fit the crime, while seven (7) maintained the opposite view. However, most of the participants who agreed that the punishment does fit the crime, were of the opinion that punishment is not consistently applied by the court.

The predicament with a question like this is that the opinions of participants could be influenced by emotion.

Most of the participants who felt that the punishment does not fit the crime, were also of the opinion that stricter sentences would deter "would be" poachers.

"The shoot-to-kill policy must be implemented" (P15)

However, on the other hand,

“The money is too good. Even killing poachers does not deter new recruits”

(P2)

In *S v Nkambule* 1993 1 SACR 136 (A) the court referred to the fact that criminologists have found that certainty of punishment, rather than its severity, is the main deterrent.

It has also been mentioned in section 2.6.5 that corruption and high-level patronage have resulted in some poachers and dealers escaping the full force of the law. As one participant said:

“What does punishment help, our system is wrong and another two poachers will step into the boots of one poacher that has been caught” (P9)

4.2.1.2 Moratorium on domestic trade

The domestic trade in rhino horn and derivatives is prohibited, in terms of a national moratorium published in the *Government Gazette* of 13 February 2009 (South Africa, 2009b), in an attempt to stop rhino horn bought legally on the domestic market, being exported illegally.

According to Hume (2015:37), the moratorium was purportedly implemented as a temporary measure, in order to afford the then Minister of Water and Environmental Affairs the opportunity to investigate a long-term solution to the rhino poaching crisis:

It is an unfortunate fact that, whatever measures have been implemented since February 2009, and whatever feasibility studies

were conducted, or perhaps are still being conducted by the current Minister of Environmental Affairs and her department, the brutal onslaught of rhino poaching has spiralled out of control and the very survival of the species is at immediate risk.

According to Walker and Walker (2012:159), it is quite possible that the tight regulation of the South African rhino market, including the domestic moratorium on horn sales, and restrictions on pseudo-hunts, caused a supply constriction during 2008. This most likely resulted in a price increase, which then created a stronger incentive for poaching.

Only two participants were of the opinion that the moratorium played a role in the increase of poaching:

“Rhino poaching was always one per cent of poaching numbers until the moratorium” (P1)

“We say that the moratorium was one of the main reasons for the increase in poaching in 2009. The bottom line is the unintended consequences of the moratorium” (P9)

However, the majority (10) of the participants supported the lifting of the moratorium on domestic trade. One of the participants responded as follows:

“Yes, the moratorium should be lifted, but that would be second best. It should reduce poaching and help private owners. It will also increase the value of live rhino and once again, National Parks will be able to achieve better prices in auctions” (P7)

Another three of the participants stated that lifting the moratorium on domestic trade will only work if the international trade ban is also lifted:

“Yes, but the ban on international trade will have to be lifted as well. The end-users are not really in South Africa, they are living in countries like China and Vietnam. For every product, there must be an end-user” (P17)

Three of the participants said that the moratorium on domestic trade should not be lifted at all. They argued that it will legitimise trade and that it will result in an increase in demand.

According to a report issued by the Department of Environmental Affairs (2013:26), those in favour of lifting the moratorium include the Private Rhino Owners Association (PROA) and the representatives of the private sector, as well as members of the public sector reserves. They argue that permission to sell horn on the domestic market will, *inter alia*, restore the confidence of the private sector rhino owners, and act as a pilot for the eventual opening of international trade. In a survey conducted by Lindsay and Taylor (2011:11), only 13 of the 67 respondents were of the opinion that the moratorium on local horn trade, and the subsequent drying up of ‘legal’ supplies of horn, were responsible for the spike in rhino poaching.

The implications of lifting or not lifting the national moratorium have been investigated by Taylor *et al.* (2014), and the findings of these authors are set out in section 2.2.1.3 of this research.

On 26 November 2015, Legodi J delivered judgment in the High Court of South Africa (Gauteng Division, Pretoria) in the case of *Kruger and Hume v*

The Minister of Water and Environmental Affairs and two others, 57221/12.

This court case was, *inter alia*, about a challenge to the moratorium on domestic trade in rhino horn. The court set aside the moratorium, for substantial non-compliance with the consultative and participatory process by the members of the public, as contemplated in terms of sections 99 and 100 of NEMBA. It was stated that the moratorium was put in place as a temporary measure, and had not been lifted since.

In Paragraph 88.4 of his judgment, Legodi J referred to a report in which rhino experts were asked for their opinion on the cause of the spike in rhino poaching in South Africa in the last four years since the moratorium:

They were asked specifically if they thought the moratorium on local trade in rhino horn had influenced poaching. Out of 63 participants that answered the question, 49% believed that the moratorium had not influenced the poaching spike, 30% thought it had influenced the poaching spike (all of whom thought it caused an increase in poaching) while 21% were unsure.

4.2.1.3 Money driven (lucrative business)

Six of the participants were also of the opinion that the increase in rhino poaching is driven by money:

“The large amount of money involved on all levels of the value chain. Lucrative business. Money versus personal risk – the risk to be caught is very low” (P5)

“It is all about monetary value” (P10)

“Money and the price of horn. Lucrative business” (P12, 13, 14 and 15)

The financial chain is the reverse of the value chain. Due to the large amounts of money involved in these types of transactions, there are organised crime investors who invest X amount at a 20% interest rate per transaction. It spreads the risk, and yields a very good return on the investment (Du Toit, 2013:114).

4.2.1.4 Increased demand

According to Du Toit (2013a:192), the message here is clear:

Rhino horn is a commodity with increasing value. Growth in market demand threatens to outpace the potential rate of supply under a trade ban regime that appears unlikely to change, so market prices should continue to rise. This makes rhino horn worthy of the attention of entrepreneurs who engage in trade and speculative investment.

Seven of the participants also mentioned that the increase in demand is a reason for the increase in poaching:

“Increased affluence in the East. Horns are a symbol of wealth” (P2)

“Established demand that is intractable to demand reduction strategies” (P4)

“There is a huge illegal demand” (P6)

“Increased demand – new wealth in Asian countries” (P7)

“More people in China and Vietnam can afford to buy horn products” (P8)

“Southeast Asia’s demand for rhino horn. Increased demand” (P11)

“The escalation in poaching is brought about by increase in consumer demand, which is influenced by perceptions that rhino horn has some benefit. This resulted in grossly inflated value being attached to rhino horn within the illegal market chain system” (P18)

The aforementioned is also in line with the view of Ferreira (2014:1), namely that the rise in poaching has been driven by an exponential increase in the illegal demand and black market price for rhino horn in Southeast Asia, especially Vietnam and China:

This increased demand for horn has not only come from the traditional Chinese medicine users, but has also been brought about by anecdotes of the unproven cancer reducing properties of rhino horn together with its newly found status symbol and general entrepreneurial uses, all supported by thriving regional economies with a higher disposable income than previously. The inelastic relationship between the increasing demand and restricted supply influences the high black market prices for rhino horn, making the product attractive to criminals and organised crime syndicates.

The recent poaching spike most likely signalled the full re-emergence of a commodity market (for rhino horn) that had been temporarily choked in the mid-1990s by civil war in Yemen, and domestic bans in key East Asian markets that depressed demand and discouraged trade. Traders and speculators therefore needed to redistribute accumulated stockpiles, and

since most easily accessible wild rhino stocks had been depleted, further poaching at that time was not economically justified (Du Toit, 2013a:194).

4.2.1.5 Socio-economic reasons

(i) Poverty and unemployment

The majority of the participants mentioned poverty and unemployment as a reason for the increase in poaching:

“Poverty, lack of alternative employment in contiguous communities” (P4)

“At present, communities are turning to poaching as it is a lucrative prospect. For every poacher that gets arrested, there are one hundred more people willing to take their place” (P9)

“Poverty of neighbouring communities” (P2, 5, 10, 11 and 12)

“The unemployment rate in South Africa – gap between the rich and the poor”
(P13 and 15)

“The dire level of poverty and high levels of unemployment within communities living adjacent to protected areas has created the ideal environment for criminal syndicates to exploit communities and entice them into poaching with the promise of income and a better living” (P18)

Poverty, according to Duffy and St John (2013:1), is both directly and indirectly linked to poaching and trafficking of ivory and rhino horn from sub-Saharan Africa. Poverty reduction depends on sustainable resource use. It is claimed that the poaching crisis in Africa is orchestrated by organised criminal networks, but ultimately facilitated by poverty.

The majority of rural communities adjacent to the KNP in South Africa, are living in poverty. Mozambique, on the eastern boundary of the KNP, ranks 185th out of 187 countries on the United Nations Development Programme's 2013 Human Development Index. With the black market price of rhino horn being high, Mozambique has become a seemingly inexhaustible supply of cross-border Mozambican poachers, who have not been deterred by the significant and growing risk of death, or lengthy jail sentences, when they cross the KNP (Hanks, 2015b:2).

According to Roe (2008:1), the trade in wildlife and wildlife products, both domestic and international, also generates cash income and employment in biodiversity-rich countries, and can represent an important contribution to their GDP. When this trade is legal, sustainable and effectively managed, it can provide benefits for local communities. When it is poorly managed and largely illegal, the benefits to local communities are lost.

Although it is believed that the local people can be prevented, by means of education, from utilising game and poaching, experience shows that this approach has essentially failed. Wild animals are considered a "public good" almost everywhere, and therefore subject to the "tragedy of the commons". Everyone tries to consume the free resources, because otherwise others will do it. The result is over-utilisation, lack of sustainability and, finally, extinction (Baldus, 2014:2).

4.2.2 Concurrent strategies

It is important to analyse the success or failure of current strategies to prevent poaching, namely dehorning, poison, translocation, increased security and

demand reduction. Despite the implementation of these strategies, poaching is still increasing, and the various participants have different opinions pertaining to the success or failure of these strategies. They are specifically named “concurrent” techniques, because it is also common knowledge that no one of these techniques can be used on its own.

4.2.2.1 Dehorning

Regarding dehorning, the following question was posed to participants: “Can dehorning limit the poaching of rhinos? Short motivation”.

Two issues are important when referring to dehorning of rhinos. The first is the possibility that dehorning would deter poachers. The second issue is the dehorning of rhinos in order to make the horn available for the market (i.e. should trade in rhino horn be legalised?). The focus of the abovementioned question was on the first issue. The kind of answers provided by the participants indicated that they understood the question correctly.

Only two of the participants were adamant that dehorning would not limit poaching, one did not know, while the majority (15) were of the opinion that dehorning can help to limit poaching. However, it transpired from the responses of the majority that there is no simple 'yes' or 'no':

“Yes, but poachers can still try and use the stump that is left over. You can not dehorn and neglect security” (P1)

“Yes, but not 100% as we still find rhino that was dehorned, being poached” (P3)

“It is a yes/no answer . . . the opportunistic poacher will still say: I am in the veld, here is a rhino, even if I can get 1 kilogram” (P6)

“It can only work if you have dehorned and your neighbours haven’t. If everybody has dehorned, it will still be worthwhile to poach the dehorned rhino. In other words it is almost a yes/no answer. Law enforcement is still important” (P17)

“Dehorning may be considered as an optional urgent measure that some rhino owners may choose to implement in areas where this may serve as a poaching deterrent. This will also require improved management, security, closer monitoring of rhino stockpiles” (P18)

According to Hanks (2015b:8), dehorning is more suited for use in smaller reserves with few rhino, and is somewhat unrealistic for larger and widely dispersed populations. This view was also shared by most of the participants, who said that dehorning can only work on private land and small reserves:

“Yes, but it will shift the focus to wild populations where horns have not been removed, for example larger nature reserves and national parks. Furthermore, it will only be effective if poachers know dehorning had been done” (P2)

“In remote areas with limited numbers of rhino it does, but it is not a guarantee as more poaching groups pop up they all need places to go and I believe the power play between the established groups keep poachers in places where dehorned animals are kept” (P5)

“Only in small reserves with limited rhino” (P11)

“Yes, not in national parks but on private land” (P12)

In a survey carried out by Lindsay and Taylor (2011:47), respondents were asked whether they agreed with a common criticism of dehorning: that all it does is shift the threat of poaching from one area to another. More than 50 of the 67 respondents answered in the affirmative.

Some of the participants in this study also linked poaching of dehorned rhino with risk to the poacher – for instance:

“ . . . the same risk for rhino with horn and those without horn; the poacher is going to choose the animal with horn” (P6)

“ . . . the poacher would have the same amount of work for less reward” (P9)

It has already been mentioned in section 2.6.2, that poaching pressure on a particular population is likely to be a function of the equation used by Du Toit (2011:13):

$$\text{Poaching pressure} = \frac{\text{Reward to poaching (from the illegal sale of horn)}}{\text{Risk to poacher of being arrested} \times \text{Effort required to poach}}$$

According to Lindsay and Taylor (2011:44), poaching pressure is thus likely to be reduced by either reducing the reward to the poachers through dehorning, or increasing the risk and difficulty associated with poaching by investing in anti-poaching security.

Hanks (2015b:8) states that the permitting system for possessing, transporting and storing the horns is considered by private rhino owners to be onerous, and imposes security risks by providing opportunities for information to be leaked – particularly on the location of horns or on their planned transportation. Some of the participants also shared this concern:

“Dehorning can limit poaching, but the legal process of dehorning and the cost, is making it not practical. Information by officials issuing the permits seems to be a problem” (P13)

The participants who were of the opinion that dehorning will not limit poaching, gave the following reasons:

“No. . . it does not work. Several instances have been reported where rhinos were killed to harvest the stumps” (P8)

This statement is correct, but the participant failed to consider (or refer to) those instances where a rhino was not poached for the stump, and the possible reasons for not poaching such a rhino.

“No, you must bear in mind, you have to dehorn every six months. That is not good for the rhino and it is very expensive. It is not good to see a rhino without a horn” (P15)

According to Lindsay and Taylor (2011:50), the frequency with which rhinos should be re-dehorned depends on the level of the ongoing poaching threat (re-dehorning should only be considered, given a high level of threat), the level of security in place, and the availability of funds. If repeated dehorning is considered necessary, rhinos should be re-dehorned every 12 to 24 months

under conditions of high poaching intensity, and every 24 to 36 months under conditions of relatively lower risk.

According to Reilly (2015b:25), it has to be agreed that a farmed rhino without a horn is not the rhino we all want to see. But it is at least a live rhino, and a live rhino is also a breeding rhino, and surely a live rhino has got to be better than a dead rhino or no rhino at all.

Most of the participants were of the opinion that dehorning would only be effective if poachers were aware of the fact that the rhinos were dehorned. In addition, security/law enforcement must also be effective. The aforementioned is also in line with the study done by Lindsay and Taylor (2011:49). With the absence of security, rhinos may continue to be poached, regardless of whether they have been dehorned or not.

During a workshop convened by the Endangered Wildlife Trust (Du Toit, 2011:40), the 41 participants who attended the workshop were all of the opinion that dehorning is not a solution in itself, and should not be done in isolation (it helps reduce reward for poachers, but anti-poaching measures need to be maintained), and that dehorning reduces risk, but does not eliminate the risk due to residual horn and re-growth.

4.2.2.2 Poisoning of the horn

Poison as a possible solution has already been discussed in section 2.6.3, and it is probably the most contentious of all possible solutions.

On the question of whether poison can limit the poaching of rhinos, the majority (11) of the participants were of the opinion that it could not, while one

of the participants was not sure. Some of the participants were of the opinion that it will not work, as either the poison/chemicals cannot penetrate the horn, or else the poison/chemicals are, in themselves, ineffective:

“ . . .the product cannot maintain its effectiveness in the cheratin [sic]” (P1)

“Does penetrating the horn work? It cannot – it is physical[ly] impossible” (P6)

“ . . .it doesn't work, it does not enter the horn” (P12, 16 and 17)

Most of the participants who said that poison would not limit poaching, were of the opinion that it would not deter poachers:

“Poachers do not know which horns have been attempted to be poisoned. Even if they did, they will not care. They do not know who the end-user is and do not worry about him” (P2)

“The fact that the end-user do[es] not no [sic] about the 'poison' will not stop them from using it” (P5)

Some of the participants also referred to the legal consequences, which has also been discussed in section 2.6.3:

“ . . . it could cause the people doing it, to be charged with murder” (P4)

“Real poisoning of horn is illegal because you can kill people” (P8)

“ . . .although unlawful, it should have an effect” (P11)

A number of participants referred to the fact that rhinos have been poached, despite the horns being poisoned:

“Does it safe [sic] rhinos from being poached. . . not at all. The properties where it has been done, all suffered losses” (P6)

“No it does not work as these rhinos have also been poached as the poachers might not even know about it” (P8)

Five of the participants felt that poisoning can limit poaching, as two of the participants stated:

“Yes – anything will help, but it is useless on its own” (P7)

“. . . this may serve as an optional poaching deterrent that may be applied by rhino owners who choose not to dehorn or trade in horn” (P18)

Most of the participants who supported poisoning were also of the opinion that it must be made known:

“Notice boards will have to be erected. Poachers must be aware of the fact that rhino horns are poisoned” (P10, 14 and 16)

“All the employees on my farm have to assist with the poisoning. They must see that we actually inject the poison. The message must be spread” (P15)

Some of the participants also asked the following question:

“What are we going to do with the contaminated horn, should trade be legalised?” (P6, 10 and 16)

It has already been mentioned in section 2.6.3, that the effectiveness of such treatments has not been satisfactorily demonstrated. According to Duffy *et al.* (2013:7), evidence to date from a number of recovered treated horns that have been sectioned, shows that the dye (and presumably also the poison)

has failed to penetrate the treated horns, suggesting that this treatment is ineffective.

4.2.2.3 Translocation

The general principles pertaining to translocation have already been discussed in section 2.6.4.

When the participants were asked whether translocation of rhinos would limit poaching, the majority (12) responded in the affirmative, but added the condition that rhinos should be translocated to “safer” places:

“ . . . if it is relocated to a highly secured area” (P3)

“Translocation of rhino can limit poaching, if the rhinos are translocated to safer places” (P15)

“The translocation of rhino to safe areas that are consistent with rhino habitat requirements may also be considered as an optional tool for preserving and stimulating the recovery of the species, as was successfully achieved from earlier rhino translocation programmes” (P18)

Three of the participants indicated that rhinos should be translocated to other continents, rather than other places in Africa. This is also an indication of the participant’s fear of corruption in Africa:

“Translocation can work if you send them to a real safe environment of which few exist in Africa” (P8)

“They must be sent to the right places. If you send them to America or Australia, it can work. But if you send it to another place in Africa, it would not work” (P15)

Some of the participants were of the opinion that there are possibly some safe places in Africa:

“Yes, translocation to Botswana, because it has vast areas of sparsely populated wilderness areas” (P6)

“Yes, if you send them to the Karoo where it is more open and less people. The people know each other and they will quickly pick up strangers in the area” (P10)

“We should move some rhino from our national parks and put them in the custody of the communities. Game farmers should be encouraged to engage surrounding rural communities and teach them to conserve and breed with rhinos. If communities are generating a substantial income from these rhinos, they would literally guard them with there [sic] lives” (P9)

According to the chief warden of the Khama Rhino Sanctuary in Botswana (personal communication), the sanctuary had not had a single poaching incident since its establishment in 1993. In 1993, four rhinos were translocated from northern Botswana, and, in 1995, another five were translocated by the North West Parks Board from South Africa. The sanctuary is a community trust, governed by a board of trustees who are elected from the local communities.

Three of the participants were of the opinion that translocation will not limit poaching, while one participant indicated that it could only be a temporary solution:

“ . . . wherever they go, poachers will follow” (P12)

“It is only a temporary solution” (P17)

The theme of corruption emerged again, as one of the participants responded as follows:

“Officials handling permits are suspects in supplying information to poachers”
(P13)

Throughout the interviews, it transpired that even with translocation, security is still important:

“We also have to recognise that the exploitation of rhino on such an unparalleled scale implies that all areas are vulnerable and will require extensive security measures to be implemented” (P18)

It has already been mentioned that those participants who supported translocation emphasised the fact that rhinos can only be translocated to “safer” places. Although a “safer” place has different meanings for different participants, increased security was mentioned by most of the participants.

4.2.2.4 Increased security

In this section, the various participants’ responses to increased security will be analysed, as well as relevant literature in this regard. Security is more proactive in nature, than law enforcement.

According to 't Sas-Rolfes (2012:12), field protection measures such as anti-poaching patrols, dehorning and horn poisoning, are all costly, and the costs are ongoing. However, these measures are likely to yield greater success than law enforcement measures, which target subsequent levels in the illegal supply chain. Such efforts are time consuming, and unlikely to ever cause more than temporary market disruptions.

Hall-Martin, Du Toit, Hitchins and Knight (2008:39) state as follows:

Not only are the numbers of rhinos poached increasing, but there are new and disturbing trends in the methods used to kill rhino for their horn. The present law enforcement effort on the part of State authorities is evidently insufficient to curb this plague, and the rhino owners will of necessity have to become more involved in providing security for their animals.

Participants were asked what type of security they had, as well as the annual cost of that security. They were also asked whether they had experienced any increase in security costs over the past three years. The reason why the researcher decided on a three-year period, was that research was done by the PROA in 2011, where the PROA also used a three-year period. This enabled the researcher to compare results, for the sake of reliability.

Participants from national and provincial reserves could not respond to the said questions, as they did not have these figures available. As far as SANParks was concerned, a considerable amount of money, in the form of equipment, is being donated or sponsored by the SANParks Honorary

Rangers or other donors (personal communication with a senior SANParks official).

Those participants who responded were all, with the exception of one, in agreement that there had been a sizeable increase in security costs. The participant who disagreed was also the participant who indicated that poisoning could help to limit poaching. However, this participant (P15) also indicated that he used security officers to guard his rhinos at night.

The following are examples of the responses from those who indicated that they experienced a considerable increase in security costs:

“The quantum of security has massively increased over the last three years by 300% to 400% currently from our last survey as cost to protect 5,000 rhinos by the private sector is about R272,000,000.00 per year only on rhino security” (P6)

“Foot patrols at R200,000.00 per annum and cost have doubled over three years” (P8)

“. . .confidential, but it has increased by 700% in four years” (P9)

“. . .cost is three times more. Bomas had to be erected where the rhinos sleep every night, fences had to be improved, cameras, etc.” (P10)

“Rangers, special rangers, canine, air and land mobility, some fences and obstacles and technology being rolled out. The cost escalated dramatically – at least double” (P11)

“The best possible security. Between R60,000.00 and R70,000.00 per animal per year. Yes, three times more” (P12)

“We appointed more field rangers than three years ago. We definitely experience an increase in security cost. Twenty per cent of our budget is spent on security cost” (P16)

“Fifteen per cent of our budget is spent on security. We have appointed a security company which works under supervision of our own personnel. We have our own field rangers who do foot patrols” (P17)

The researcher added Question 8 for reliability purposes. Participants were asked how financial costs of keeping rhino had changed since 2008. Participants had a choice between the following:

- Significantly decreased (more than 10%)
- Moderately decreased (between 10% and 5%)
- Small change (between 0% and 5%)
- Moderately increased (between 5% and 10%)
- Significantly increased (more than 10%)

Six (6) participants (including participants from national and provincial reserves) did not respond to this question, while the majority (11) of the participants were of the opinion that costs had significantly increased. Only one participant indicated that they had experienced a small change in costs.

According to Jones (2014:127), the PROA carried out a recent survey among private reserves and rhino owners. They were asked to advise their budget

expenditure on “rhino security”, and also the size of their reserves. When compared, the minimum expenditure was R250,000.00 per annum, and the maximum R6 million per annum. When total expenditure is divided by the total hectares of private rhino reserves – it works out that, on average, R136.00 per hectare per year is spent on rhino security. This equates to R272 million spent annually.

It is evident from the interviews and the questionnaires, that there has been a significant increase in the cost of security, in order to safeguard rhinos. Additional personnel have been appointed in order to do foot patrols. According to Baldus (2013:1), without “boots on the ground” the illegal killings will not be terminated. It is also evident that costs which should be spent on research, upgrading on farms or reserves, as well as reserve expansion, is now being spent on security.

Walker and Walker (2012:182) also state that there is no doubt that “feet on the ground” is a fundamental component in dealing with the immediate short-term poaching crisis, but this alone does not improve enforcement, especially in state parks and reserves. This requires committed political will – which means increased spending.

According to Jones (2014:129), the costs and risks of ownership have caused a number of rhino owners to sell their rhinos; accordingly, an estimated 400,000 hectares of rhino range has been lost.

There is also a close correlation between the various responses to questions 8 and 9, where the following question was posed to participants: “*How would*

you describe the net profit made from having rhino on your farm for the last financial year?:

- *Costs greatly exceed benefits*
- *Costs slightly exceed benefits*
- *Costs similar to benefits*
- *Benefits slightly exceed costs*
- *Benefits greatly exceed costs”.*

Participants from national and provincial reserves did not respond. Once again, only one participant (P15) indicated that costs are similar to benefits. The rest of the participants all agreed that costs greatly exceed benefits:

“Accept [sic] for tourism value, rhinos have become a liability more than an asset” (P16)

“Our rhinos currently only have tourism value. It is one of the big five and tourists are keen to see rhinos . . .no, it still has benefits, but costs greatly exceed benefits” (P17)

Massé and Lunstrum (n.d.:3) are particularly concerned about the militarisation of conservation practice in response to commercial poaching. Such militarisation is driven and rationalised by discourses of war and national/regional security, that transform poaching from a conservation issue into a security issue.

4.2.2.5 Demand reduction

When participants were asked whether they have any suggestions on how to stop poaching, demand reduction was mentioned by only one of them:

“Simultaneously, sustained effort has to be made to reduce demand by consumer countries” (P18)

Most of the participants supported legal trade as a possible solution, hence it is obvious that legal trade cannot run alongside demand reduction campaigns.

Two of the participants, however, commented on demand reduction:

“Some NGOs are against legal trade. They support demand reduction which, taking into consideration the current situation, will be a futile exercise” (P6)

“NGOs are in favour of demand reduction. This will only benefit the NGOs. You cannot change a long-standing tradition” (P10)

It has already been mentioned that NGOs (with the exception of one) were reluctant to participate in this research. As many of the NGOs support demand reduction campaigns, the literature in this regard had to be analysed.

According to Thomson (2015), who represented OSCAP at the workshop of the Committee of Enquiry in March 2015, it appears from various reports that the current demand for rhino horn is from newly created markets spurred on by newfound wealth in Asia, and are not old traditional TCM markets:

This makes demand reduction a lot easier as there should be little or no ‘cultural’ sensitivity involved in addressing these markets and bringing a halt to the demand for rhino horn.

According to Wildlife ACT (2015), even if trade in rhino horn ultimately becomes viable in the long-term, one has to understand that this trade will only perpetuate the idea that animal products have a medicinal or health value or benefit. What one should rather be focussing on, is changing deep-seated beliefs that these animal products have some sort of intrinsic value.

According to Humane Society International (HSI) (2014), insatiable demand for rhino horn is driving rhinos to the brink of extinction; therefore, reducing that demand is crucial. The HSI also claims that demand for rhino horn in Vietnam has decreased by 38% since the launch, a year ago, of a public education and awareness campaign jointly implemented by HSI and the Vietnam CITES Management Authority (Humane Society International, 2014).

't Sas-Rolfes (2012:13) is of the opinion that the aforementioned views of the NGOs to prevent the current poaching onslaught, may not work, for the following reasons:

- (i) It is predicated on the conviction that rhino horn has no medicinal value. Just because Western reductionist science has not (yet) established a healing effect of rhino horn, does not negate the deeply-held beliefs and rich ancestral experience of an Eastern culture that adopts a more systems-based approach to medicine.
- (ii) It is disingenuous to argue that the use of rhino horn medicine necessarily causes poaching, when horn can be obtained by non-lethal means.

- (iii) The general publicity campaign may have an impact on marginal (fringe) consumers, but is unlikely to reach those actually responsible for paying the extraordinarily high prices that are driving the poaching problem.

According to Hanks (2015b:9), the likelihood of completely stopping the use of rhino horn is very small, for two main reasons:

- (i) China is a country of over 1,3 billion people, with 56 different languages. It would be a formiddable task to contact even 1% of that total spread across such linguistic diversity.
- (ii) TCM is so well entrenched in China, that it would take at least two to three generations to wean people away from some of the products they believe have genuine therapeutic and medicinal properties – an unrealistic time frame at present rates of poaching.

The demand reduction approach assumes that there is too much demand for rhino horn, that this needs to be somehow reduced in volume, and that this might save the rhino. However, according to 't Sas-Rolfes (2012:13), the challenge for rhino conservation may not be that there are too many potential consumers, but rather the existence of a relatively small number of really persistent ones, oblivious to legality and ethical arguments, and willing to pay increasingly high prices to acquire rhino horn. In the case of the latter scenario, a different approach might be far more effective – that of providing an appropriately regulated supply to the market.

4.2.3 CITES trade ban

Although only three participants indicated that the ban on international trade in rhino horn was the most important reason for the increase in poaching, the majority were of the opinion that the ban was one of the reasons why the CITES fight against illicit wildlife trafficking is failing:

“Easy money for organised crime syndicates because of increased price in horn due to trade embargo” (P2)

“Prohibition of legal supply routes will promote illegal supply which will increase poaching”. Banning goods for which there is an intractable demand has always failed, for instance alcohol, drugs and prostitution” (P4)

“The fact that it is illegal, creates opportunity for criminals. Easy money – increased demand – increased poaching” (P7)

“The Western world does not want to understand sustainable utilisation. There is no trafficking in deer velvet which is grown legally in New Zealand and large quantities exported to North Korea” (P9)

According to Hanks (2015b:10), the world should look at the failure of the U.S. alcohol prohibition legislation, in force for some 13 years, from 1920 to 1933, and the ongoing global efforts to eliminate the international drug trade. Both are examples of trade bans that have not worked. In fact, illegal markets expanded dramatically, thereby enriching criminals, who have enjoyed greater incentives to trade with anyone and everywhere.

According to Du Toit (2013a:60), recent events have proved that the CITES approach is a dismal failure. The demand for rhino horn is stronger than ever,

and is driving a new wave of intense poaching. The illegal trade is driven by the high price for rhino horn. The price is high because the ban on international trade has made rhino horn artificially scarce. Rhino horn has become artificially scarce because there was an increase in demand, without a legal supply (see section 4.2.1.4).

CITES trade bans have not succeeded in halting the rhino horn trade, and the large reduction in black rhino populations has occurred even though it is included in Appendix 1. This indicates that international trade bans alone have not been effective (Department of Environmental Affairs, 2013:27). As Weber, Mandler, Dyck, Van Coeverden De Groot, Lee and Clark (2015:391) state:

By removing legal trade, incentives to preserve wildlife may diminish; this can push trade 'underground' where it is unmonitored, uncontrolled, and ultimately the preservation of a species can be ineffective and lost.

According to Reilly (2015a:4), the majority of custodians of Africa's rhinos wish to scrap the ban, which has not worked for 38 years, in favour of trying the legalisation of trade. The pro-trade states own approximately 93% of Africa's white rhinos, yet they are being forced to continue with a dysfunctional ban by non-custodian member CITES states which have no rhinos of their own to defend.

Jones (2015:15) states as follows:

The reality is the trade ban has not worked by any reasonable measure, and on the contrary has helped create a vast illegal

market dominated by transnational crime syndicates that remain untouchable. According to a survey conducted by the PROA in 2015, more than 85% of their members support a trade proposal “*to bring much needed revenue back to fund rhino conservation and security cost*”.

Thomson (2015:33) gives the following opinion:

Today, CITES is a very different organisation to what it was in 1975. There are now more NGO delegations than there are official ones, and it seems that most of these are animal rightists. Animal rightists are people whose purpose in life is to abolish all animal ‘uses’ by man, and they are virulently opposed to the wildlife trade; whereas the purpose of CITES is to regulate the international wildlife trade. In CITES, all the accredited animal rightist NGOs are actively engaged in sabotaging the convention. This is why CITES is a failure.

The aforementioned is also in line with the comments of some of the participants – for example:

“ . . . consider how saving the rhino would affect the fundraising at those organisations whose interests are vested in its continued endangered status”

(P16)

The aforementioned view is also supported by Reilly (2015a:3):

As harsh as it might be to say, it is not in the financial interests of the anti-trade NGOs to find a solution to the rhino crisis, for this would simply remove a very lucrative platform for raising donor funding on

which they survive. *Diceros bicornis longipese*, the western subspecies of African black rhino, was still being monitored long after its extinction. Revealing its extinction would have removed the monitoring NGO's reason to exist.

4.2.4 Possible solutions

The third category holds possible solutions to the poaching problem. This category was divided as follows for the purpose of the analysis:

- Theme: Sustainable use
- Sub-themes: Community conservation, Pro-trade/Anti-trade, Trading partner and Centralised database

4.2.4.1 Sustainable use

It has already been mentioned in section 2.7.4, that the sustainable use approach aims to maximise the benefits from wildlife to the people on whose land it lives. It has also been mentioned that the sustainable use approach is most effective where proprietorship is strong and prices high – as indicated in Quadrant 3 in Table 2.3.

The various forms of sustainable use have already been discussed in section 2.7. For the purposes of this research, the focus is on “legalised trade” as a form of sustainable use.

When participants were asked about suggestions on how to stop poaching, a number of participants mentioned “sustainable use” as a possible solution:

“. . . leftist environmentalists not understanding the concept of ‘if it pays it stays’ in poorer countries in Africa” (P2)

“Protectionism is failing as it does not take into consideration the needs of people who live in Africa and is dictating to Africa from Westerners” (P7)

“Sustainable use – the existence of species and the livelihoods of people are interrelated, especially those living in rural areas. The Western world does not want to understand sustainable utilisation” (P9)

“Sustainable use helped to increase the numbers of other species in South Africa. As long as landowners and communities have an incentive to continue to protect rhinos, rhinos will continue to thrive” (P10)

“If it pays it stays. Unfortunately most of the countries, especially those without wildlife, do not understand the concept of sustainable utilisation” (P16)

According to Thomson (2013:5), the most important element of the World Conservation Strategy (WCS), from the game ranchers' point of view, is what the document refers to as “living resource conservation”. It outlines three objectives which are, in brief, the following:

- (i) To maintain essential ecological processes and life support systems.
- (ii) To preserve genetic diversity (no species must become extinct).
- (iii) To ensure the sustainable utilisation of species and ecosystems which support a number of rural communities as well as major industries.

In other words, the WCS supports and promotes the sustainable use of wildlife for both commercial and subsistence purposes.

According to Hanks (2015b:10), the purpose of CITES has been made clear in its strategic vision, indicating that CITES recognises that trade in wildlife species is indeed an option for its conservation:

Conserve biodiversity and contribute to its sustainable use by ensuring that no species of wild fauna or flora becomes or remains subject to unsustainable exploitation through international trade, thereby contributing to the significant reduction of the rate of biodiversity loss.

Child (2015:207) refers to a recent scientific publication that shows that in Southern Africa, wildlife in protected areas has increased, whereas wildlife in parks in East and West Africa has declined by 50% and 80%, respectively:

South Africa's success is based on bold policies to maximise the returns from wildlife to private, community and state landholders, and to ensure that wildlife is the most competitive use of land in drylands and forests. This is called the sustainable use approach, at the core of which lies two principles – proprietorship and price.

According to Child (2012:4), the sustainable use approach predicts that (a) developing the ownership of rhinos to private, community and state landholders, and (b) promoting legal markets for rhino hunting and trade within an institutional framework that is built up from decisions at international

forums such as CITES, will provide powerful economic incentives for rhino conservation in South Africa.

t Sas-Rolfes (2015:28) is of the opinion that if South Africa and other Southern African countries are thwarted from employing sustainable use principles and accessing lucrative overseas markets for consumable wildlife products, the economic viability of wildlife ranching and conservation will be seriously undermined.

Legal trade as a form of sustainable use, will be discussed in the following section.

4.2.4.1.1 Legal trade

The arguments of the anti-trade supporters, and the pro-trade supporters' responses to those arguments, will be presented first, whereafter the various arguments of the pro-trade supporters will be discussed.

4.2.4.1.1.1 Arguments by anti-trade supporters

When participants were asked whether legal trade in rhino horn can limit poaching, four participants responded in the negative:

“No, too many illegal syndicates and systems already in place. There will always be two legs, legal and illegal, for example diamonds and ivory. Legal trade will have a negative impact on rhinos in other range states” (P5)

“Legal trade is not an option. South Africa will not be in a position to regulate a legal trade” (P14)

“Trade cannot limit poaching as we do not know what the demand is. The demand could be too big. For a legal trade you need a trading partner – I don’t think South Africa will be able to find a trading partner” (P15)

“With only about 20,000 rhino available globally, the demand far exceeds supply which make rhino horn scarce and more desirable as numbers decline. Legal trade in horn, will only serve to confirm its desirability and open up a greater market of consumers who may currently choose not to possess or consume rhino horn because it is illegal. A legal trade system without stringent regulations and controls will only create an environment for illegal products to be legitimised” (P18)

The following arguments against a legal trade can be deduced from the aforementioned comments:

- (i) The demand for rhino horn is too great.
- (ii) Legal trade can create the opportunity for illegal rhino horn to enter the market.
- (iii) South Africa will not be able to find a trading partner.
- (iv) South Africa will not be able to regulate a legal trade.

This is also in line with the arguments of some of the NGOs. The Network for Animals (2015:8) is of the view that lifting the ban on rhino horn trade would be disastrous for rhinos because *“it would legitimise and encourage rhino horn use, thus leading to increased demand and even more poaching”*.

According to WildAid (2015), *“trade will send a counter-message to consumers, potentially creating massive new demand”*.

WESSA issued a warning in the following press release (WESSA, 2015):

- the current trade proposal carries an unacceptable high risk of being corrupted by the poaching syndicates and illegal horn traders, and that re-opening legal trade will encourage a growth in horn consumer demand and speculation buying;
- Furthermore, creating legal access to horn risks reawakening demand in older markets, such as Taiwan, Japan, Singapore and Yemen, where demand for rhino horn was prevalent in the 1970s and 1980s and has since decreased. If demand grows again in these markets, it will put upward pressure on the horn price, incentivising poaching.

The David Shepherd Wildlife Foundation (DSWF) (as quoted by Walker and Walker, 2012:175) holds the following viewpoint:

Once rhino horn is legally available, demand will soar, as it has with ivory. CITES may well be starting to regret opening up legal ivory trade with China – those responsible for elephants in range states certainly are – and they simply don't have the resources to combat increasing wildlife crime. Ivory prices, elephant poaching and ivory smuggling were all supposed to fall as a result of this experiment. The opposite has happened. It's not a case of people switching from illegal to legal ivory. They are now buying both.

According to Child (2012:4), there are widely used arguments that whatever the local success in Southern Africa, the trade in rhino horn, or ivory for that matter, will be used as a cover for illegal trade from other countries with a less successful wildlife conservation policy.

The arguments raised by the supporters of an anti-trade approach were already identified during the literature review, hence the following questions were posed to participants, and also added to the questionnaire:

- *In order to legalise trade, South Africa needs a trading partner. Do you think that is possible and what do you suggest in this regard?*
(Question 15)
- *Will South Africa be in a position to effectively regulate a system of legal trade nationally and internationally?* (Question 17)
- *Will it be possible to keep illegal rhino horn out of the legal market?*
(Question 20)
- *Will a legal trade of rhino horn have other negative impacts on the conservation and well-being of the species?* (Question 21)
- *Do you think that South Africa will be in a position to meet the demand in rhino horn on a continuous basis, bearing in mind that there might be an increase in demand?* (Question 24)

The topics covered by the various questions will now be dealt with separately:

- (a) Will South Africa be in a position to find a trading partner?

The majority (15) of the participants indicated that South Africa would be in a position to find a trading partner:

“Yes, China and Vietnam need to admit to being countries using horn and must agree to cooperate in legalised trade” (P2)

“Yes, it is going to be easier than we think” (P7)

Most of the participants who indicated that South Africa would be able to find a trading partner, mentioned China and Vietnam as possible trading partners. Some of the participants also mentioned Cambodia, Thailand and Yemen (P9 and 15)

Two of the participants even indicated Texas as a possible trading partner, should rhinos be translocated to Texas:

“If rhinos are translocated to Texas for instance, a country like Texas will also be prepared to trade” (P16)

“Yes, countries in the East, even a country like Texas, if rhinos are translocated to Texas” (P17)

Participants, however, suggested certain conditions:

“ . . . countries must agree to a legalised trade under strict conditions” (P2)

“ . . . those that abide by regulations in respect of dealing in legal horn. I know this will be an imperfect system but we want to keep the balance of power in favour of South African producers. Porter’s 5 forces model” (P4)

“We must just be wake-up that the same thing does not happen again as with the ivory where the group of buyers formed different groups and agreed to keep the price low (price fixing)” (P5)

“. . . but then it would require intergovernmental agreement to provide a platform for legalised trade and thereafter governments to stand back and let the private sector do its own thing” (P6)

“However, South Africa also needs to consider the positions of African and international governments who are opposed to trade in any form. A decision to trade may have dire consequences for South Africa’s international relations” (P18)

One participant (P3) did not respond to this question, and another (P14) responded by saying that *“South Africa will not be able to find a trading partner”*. The participant could not give any reasons, however.

- (b) Will South Africa be in a position to effectively regulate a system of legal trade nationally and internationally?

When participants were posed this question, five (5) indicated that South Africa will not be in a position to effectively regulate a system of trade:

“Unlikely, our record of corruption is too high” (P2)

“No, the integrity of officials is seriously under suspicion. Corruption is a problem” (P13, 14 and 15)

“The regulation systems implemented to support the trade in ivory did not work and there is little evidence to indicate that this will be improved for any

form a trade approach, be it a once-off trade, domestic trade or permanent sale” (P18)

Only one of the participants did not respond to this question.

According to the NFA (2015), even if South Africa were able to adequately monitor and control a trade in rhino horn, there is little evidence that, at the moment, its trading partner would be able to do the same.

The majority (12) of the participants were of the opinion that South Africa would be in a position to effectively regulate a system of legal trade nationally and internationally. It transpired from the various responses that it should be done in a transparent and accountable manner, free of corruption:

“We already have a system in place for managing stockpiles. DNA plays a very important role. . . enough proof that it can be done in a transparent and accountable manner and to minimise corruption” (P6)

“Legal trade should be regulated in partnership between the private sector and the government – a central database. The system should be developed in such a way that it will not be flawed by corruption” (P16)

“. . . on condition that both government and the private sector are involved, however, I am concerned about the trustworthiness of government officials because of corruption” (P17)

‘Yes, we have already done it in the diamond trade” (P4, 8 and 12)

According to ‘t Sas-Rolfes (2015:27), such a system would need to include measures to prevent horn from newly poached animals from being laundered

and sold through legal channels, as well as a mechanism to subsidise conservation of other threatened rhino populations in the event of increasing prices for horn. Without such assurances, managers of other rhino populations are likely to perceive additional threats to their own safety, and will most likely contest legalisation.

Biggs *et al.* (2013:3) are of the opinion that one option for the implementation of a highly regulated trading system, is through a Central Selling Organisation (CSO). A CSO would negotiate and manage the selling of horns, so that it is more attractive, reliable and cost-effective for buyers to obtain the product legally, than through illegal means. A CSO would be supported by, and accountable to, the white rhino range states and the CITES CoP (which include governments from demand countries), for its performance.

Eustace (2011:3) suggests that, rather than a 'free for all', it would make sense to have all sales of horn conducted through a CSO, where the volumes can be controlled, and the legality of the origin of the horn can be assured. An essential component would be to have market expertise to manage the sales, and there should be scope to replace managers when and if that becomes sensible. The CSO could be owned by the owners of rhino, *pro rata* approximately to the number of animals they own or of which they are custodians. The structure should probably not allow for one single organisation to have control.

According to the Endangered Wildlife Trust (2013b:3-4), based on the experience with the establishment of trade in other wildlife products, South

Africa will have to attend to the following, in order to conduct legal international trade in rhino horn:

- (i) Trade may be limited to suitable trading partners, pre-approved by CITES, who have proved that their internal trade controls are sufficient to prevent laundering of illegal horn.
- (ii) Proposed structure and trading protocols to be used in both South Africa, as the source country, and the consumer country, will need to be addressed.
- (iii) An improved control information system linked to the permitting system and to the DNA database (RhoDIS), is an important step towards trade controls to provide transparency around how horns have been obtained.
- (iv) South Africa will need to prove that effective internal trade controls have been implemented, and are sufficient to prevent the laundering of illegally obtained rhino horn.
- (v) Adequate regulatory and other measures to ensure that South Africa complies with reporting and inventory obligations – which would include doing the following:
 - Encouraging non-compliant private rhino owners to register their horn stockpiles by providing guidance and assistance with security, convincing them that their personal information will be stored securely, and issuing DNA certificates with each possession permit for each rhino and each rhino horn.

- Conducting regular audits of horn stockpiles to discourage illegal sales.
- Only issuing possession permits for rhino horns when sufficient proof of legal ownership or acquisition is provided.
- Increasing capacity at ports of entry/exit to detect illegal wildlife products.

(vi) Clarity on how the revenue from trade will be utilised.

In order to establish whether private rhino owners would be prepared to comply with certain requirements, participants were asked whether they would be prepared/willing to provide the following details: number of animals, records of reproduction, mortality, sales, purchases, hunting and poaching. The majority (14) of the respondents indicated that they would be prepared to provide all the abovementioned information. Most of the participants indicated that they are providing this information at the moment.

Three of the participants said that they would only provide this information if trade is legalised – which means that they are not complying with the provision of information at the moment:

“ Only if it is held by an independent and confidential organisation such as PROA – not by government” (P8)

“We will provide this information, but trade must be legalised” (P10)

“We are prepared to provide all the information that might be necessary for keeping a centralised database” (P16)

Four of the participants did not respond to the aforementioned question.

Participants were also asked whether they had any suggestions regarding a centralised database, and who should be responsible for such a database.

Participants were of the opinion that the system should be developed in such a way that there would always be a trail to follow – for instance:

“The system must be developed in such a way that there will be a trail to follow. Horn must be traced back to its origin” (P16)

“It would be imperative that all legally acquired rhino horn be declared and registered on a national centralised database. These horns need to be registered in the prescribed manner and then stored at a central storing facility. This will be the only way that South Africa will be able to convince CITES that we do have effective control and no illegal horn can enter the market” (P5)

Participants had a number of different opinions about who should be responsible for keeping such a database. Four of the participants were of the opinion that the government should be responsible for the database. Nine of the participants indicated that it should be kept by either the private sector or an NGO. Two participants indicated that it needed to be a partnership between the private sector and the government:

“The government must be included in order to enforce compliance with regard to information that must be provided” (P6 and 17)

One participant was adamant that it could be anybody except government. It is also evident, from the abovementioned responses, that participants do not

have confidence in government for keeping such a database. This is also in line with the comments by Knight (2015:13): “*Distrust by land owners for many dysfunctional and/or corrupt government departments has plagued the provision of information in the recent past*”.

- (c) Will it be possible to keep illegal rhino horn out of the legal market?

The majority (15) of the participants were of the opinion that it will not be possible to keep illegal horn out of the legal market. However, most of these participants indicated that the trade in illegal horn can be limited:

“Not possible to do 100% but good enough – just as the big retailer brands do” (P4)

“Only if all legally acquired rhino horn be declared and registered on a national centralised database” (P5)

There will always be some laundering – but it is more difficult to launder than to be outright illegal. Proper controls will incentivise buyers and sellers to be legal and thus they will report illegality” (P7)

“It won’t be possible to keep illegal horn out of the legal market, but it can be limited. We have a similar situation with diamonds and cigarettes” (P16)

It depends on the reliability of the centralised database. Twenty per cent of the rhino horn in the market will be illegal and eighty per cent will be legal” (P17)

Seven of the participants who indicated that illegal horn could not be kept out of the legal market, only gave reasons to that effect, and did not provide any counter-arguments:

“No, what about cigarettes and diamonds?” (P14)

“Any legal market system is open to exploitation in spite of regulation and control measures and this is further undermined by corruption” (P18)

According to Du Toit (2013b:9), the rhino horn production faces the same dilemma as blood diamonds:

The biggest controversy facing the diamond trade currently is conflict diamonds also known as blood diamonds because of the bloodshed involved to obtain them. Conflict diamonds were smuggled into the diamond trade along with legitimate diamonds. Concerned groups in the diamond industry have instituted the Kimberley Process, which monitors and certifies a diamond at every point of its production process. The United Nations estimates that more than 98% of diamonds on the market now are conflict-free because of the Kimberley Process.

According to Du Toit (2013b:10), the same kind of procedure (*Bicornis* Process) must be put in place to certify that the product is legally obtained and sold as blood-free horn (traceability).

Three of the participants were adamant that illegal rhino horn could be kept out of the legal market:

“ Yes, because DNA will tell the difference in blood horn and legal horn” (P6)

“Absolutely yes. Only registered owners of rhino can market – must produce proof of DNA matching” (P8)

“Yes, a responsible body will be able to keep illegal horn out of the legal market” (P9)

According to Wiltshire (2015b:41), it might be possible that laundering will increase; this is unlikely to lead to a sustained increase in demand for poached horn, as South Africa already has a sophisticated horn-tracking system based on DNA, isotopes and chip monitoring in place.

- (d) Will legal trade of rhino horn have other negative impacts on the conservation and well-being of the species?

When the participants were posed this question, five (5) were of the opinion that legal trade in rhino horn would have other negative impacts on the conservation and well-being of the species. One of the participants, for instance, argues as follows:

“It is important that we place value to the presence of wildlife in their natural environment and not as tradable commodities where market systems determine the value of a species in competition with others. This is a fine balance which could easily be distorted by encouraging the legal trade in rhino horn which may result in the exploitation of other species purely driven by consumptive needs and not conservation” (P18)

According to Child (2015:4), there are three counter-arguments to this opinion:

- Rhino horn trade has been banned for 35 years, yet rhinos are still highly threatened, and surely it is time to devise new approaches;

- Legalising rhino horn trade for South Africa is likely to shift the market out of the hands of organised crime into legal channels, which must be good for rhinos and other wildlife currently moving through these illicit channels. A large and steady supply of horns is also likely to lower and stabilise prices, which also plays against the black market; and
- Rhinos are most seriously threatened where proprietorship of them is weak or where there are insufficient funds for law enforcement in protected areas.

Eustace (2014:2) states that the intention of a smart trade is to satisfy demand with legal horn, which should result in a reduced poaching threat for all rhino populations. With regard to the view of the anti-trade supporters, namely that if Africa trades, then endangered populations of rhino in the rest of the world will come under increased pressure, Eustace (2011:4) argues that pressure will be taken off those animals, because Africa will fill the market with legal goods at cheaper prices, and there will be fierce policing of the illegal trade in China.

According to Biggs *et al.* (2013:3), opponents of a legal trade in rhino horn argue that the bulk sales of ivory by countries in Southern Africa leads to increased poaching elsewhere on the continent; yet, there is no conclusive empirical evidence that supports this. Moreover, the ivory sales take place too infrequently and unpredictably to attract buyers away from the illegal market and reduce poaching pressure.

One participant did not respond to this question, while the majority (12) of the participants were of the opinion that legal trade would not have other negative impacts on the conservation and well-being of the species:

“Money will flow back to rhino owners/conservators. Fewer rhinos will be butchered. There will be a value to rhino again” (P4)

“. . . depending on the way the income generated is utilised” (P5)

“I don’t believe there will be any negative impacts. We are in a fortunate position to have a very powerful private sector who are able to take the pressure off wild rhino. Not to make use of this would be fatal, and the private sector will throw the towel in very soon” (P7)

“Not if well regulated. Proceeds may benefit other species” (P11)

- (e) Will South Africa be in a position to meet the demand in rhino horn on a continuous basis?

The majority (10) of the participants were of the opinion that South Africa will be in a position to meet the demand; however, current stockpiles must be used to "level the playing field" first:

“. . . if you wisely filter the stockpiles into the market” (P10)

“Five ton per year of the current stockpile plus an increasing annual amount from private owners would be the equivalent of what is being poached now” (P9)

“Yes, we have huge stockpiles in South Africa and rhino horn can be harvested on a regular basis” (P17)

One participant did not respond to the question and another participant was unsure:

“Unsure – we do not know what the actual market is. By opening trade for a trial period we can establish this” (P2)

Five of the participants indicated that the demand is too big:

“No, the demand is almost infinite and growing” (P11)

“No, demand will grow” (P5, 10 and 12)

“China has 1,5 billion people. If 10% of these people has cancer, it means that 150 million people could buy 1 gram of rhino horn per year. It is impossible to supply that amount of rhino horn per year” (P15)

In this regard, 't Sas-Rolfes (2012:15) states that one needs to distinguish between short-term and long-term effects. In the short term, the demand curve would shift outward after a ban was lifted, if previously law-abiding consumers decided to enter the market. This is known as the reverse stigma effect, and is often cited as a reason to maintain prohibitions. However, in examples of alcohol and drug markets where prohibitions were lifted, fears of reverse stigma effect turned out to be exaggerated.

't Sas-Rolfes (2012:16) then continues to refer to the longer-term effect, where two other factors could lead to an outward shift in the demand curve, rising income levels and aggressive product marketing by suppliers:

- Rising income levels is a factor irrespective of whether the market is legal or not.

- Aggressive product marketing is probably easier in a legal market, but can also be addressed by measures that are far easier to establish in that environment than in an underground market.

t Sas-Rolfes (2012:16) argues that technological advances such as DNA fingerprinting allow for the mitigation of so-called 'laundering' of illegal stocks, and legal suppliers would have strong incentives to keep illegal supplies out of their market.

t Sas-Rolfes (2012:14) refers to another argument that has been raised against the legal trade option. This argument is a hard-line ethical stance against any form of human interference with, or commercial exploitation of, rhinos, on the grounds of them being "wild" animals. This stance regards any form of rhino "farming" as abhorrent – an attitude that typically extends to the dehorning of live, free-ranging animals. He responds to this argument by stating that relatively few unmanaged or "wild" rhino populations remain – most are at least subjected to the soft exploitation of tourist viewing, as well as frequent veterinary interventions. Such ethical stances are neither objective nor absolute – they are subjective and relative. This stance is ultimately self-defeating, if it results in the type of brutal treatment of rhinos that one is observing, simply because a compromise position is not accepted.

4.2.4.1.1.2 Arguments by pro-trade supporters

- (a) Arguments from the participants' point of view

The majority (13) of the participants who took part in this research were of the opinion that legal trade in rhino horn can limit poaching of rhinos. Two of the participants indicated that they did not know if legal trade could limit poaching.

The participants who supported legal trade, responded as follows:

“The illegal trade is driven by crime syndicates who seek to maximise profits and minimise uncertainty of supply . . . if they are provided with a more convenient, reliable supply, they will gradually move to that route. Poachers will change behaviour if demand drops” (P4)

“We say it can limit poaching poorly because if the product is available through legal supply, then we will have a reduced poaching pressure. The moment that the moratorium on local trade was implemented and it was also made difficult for hunters from Asia, there was a lack of supply, hence the door was open for supply through poaching” (P6)

“It is the only way to get funds where they are needed and to address the demand issue. It will give incentives for people to protect rhino again, and could help communities to take part in conservation as opposed to be recruitment grounds for poaching” (P7)

“Regulated legal trade in horn will have Chinese pharmacists prefer the cheaper and legal route. With cheaper pricing comes less poaching” (P8)

“Legal trade will definitely limit poaching. The market could be supplied with horn that do not come from rhinos that are killed specifically to supply horn. The wildlife ranching sector, were it given the opportunity to prosper through

utilisation – both consumptive and non-consumptive – is the only buffer which we have which will ensure the future survival of our rhino population” (P9)

“If trade is legalised, the value of stockpiles will drop, forcing investors in illegal stockpiles to sell. Legal trade is the only option that we have now, if this is not going to work, nothing will work” (P10)

“Yes, it will pay for protection on private farms” (P12)

“The supply will be higher which will reduce demand, causing the prices to drop” (P13)

“We have a huge area to protect which already puts a burden on our budget. We have a legal stockpile worth a lot of money. We can utilise that money to appoint more field rangers and to buy modern equipment in order to protect our rhinos and to increase the population. Legal trade will have a negative impact on crime syndicates. Communities must be enabled to farm with rhinos in order to address poverty” (P16)

“. . . you will have more resources available in order to protect rhino” (P17)

Participants were also asked the following: *“If trade were legalised either nationally or internationally, would you buy or sell horn?”*

Eleven (11) participants indicated that they would be prepared to sell horn, while four indicated that they would also buy horn. Two (2) participants indicated that they would not sell horn, while five (5) participants did not respond. The aforementioned is an indication that the majority of rhino owners and rhino custodians in South Africa are prepared to participate in a legal trade of rhino horn.

(b) Arguments from the experts in rhino conservation's point of view

According to Eustace (2014:2), poaching will be less profitable to the criminals than now, and carry higher risks, and the market for poached horn will be much smaller:

Illegal goods typically trade at 30% discount if there is a legal market. This relates to the risk of being caught and punished. In addition, there will be the risk of buying false or poisoned horn in the illegal market – which will increase the discount to, say, 40%.

Hanks (2015b:11) summarises the advantages of a strictly controlled legal trade:

- (i) Rhino horn could be supplied without killing a single animal, as horns regrow and produce about one kilogram per year in males, and 600 grams a year in females. As an alternative to an annual cut, horn can be shaved off in much smaller quantities throughout the year. More importantly, live rhinos would be more valuable than dead rhinos – which is not the case at present.
- (ii) The trade in horns would be brought out into the open, with transparency on horn prices. Linked to this would be the ongoing monitoring of consumer demand relative to supply, enabling the rhino 'owners' to respond immediately to changing market conditions relating directly to consumer demand.
- (iii) Those who have rhinos on their land, urgently need mechanisms for funding that are likely to be financially sustainable, and not have to

rely on donations which are fickle and unreliable. By becoming active market participants, those responsible for rhino conservation would be able to generate a substantial income from these animals, that could be 100 times higher than that generated from domestic stock.

- (iv) Rhino horn stockpiles held by conservation agencies and private landowners could be fed into the market, removing the high costs and security risks associated with maintaining them.
- (v) A significantly increased and potentially ongoing source of supply should greatly reduce the incentives for speculative stockpiling by criminals, because a legal supply would deliver rhino horn more reliably and cost-effectively than the illegal trade.
- (vi) A controlled legal trade should encourage other private landowners and, importantly, local communities, to obtain and maintain their own rhino populations, and to start breeding from them – which should have a significant impact on helping to increase rhino numbers. With supplementary feed, a farm of 16 km² could hold at least 60 rhinos, and could create over 100 full-time jobs and generate at least R12 million a year in areas where at present there are virtually no opportunities for sustainable employment. No form of agriculture will produce the same yield, per hectare, as rhino farming.

‘t Sas-Rolfes (2015:26) is of the opinion that the immediate effect of potential trade legalisation cannot be predicted, as not enough is known about the current markets for rhino horn. If they are driven largely by speculative

stockpiling – ‘banking on extinction’, legalisation could cause a significant drop in prices, which would likely be accompanied by a drop in poaching pressure. However, if the number of potential consumers is large, and legalisation attracts many new buyers, the price could remain at similar levels, or even increase. Rising prices might benefit those who farm rhinos and can reinvest their increased returns into security, but will not benefit custodians of wild populations who are either unwilling or unable to sell horn.

According to the Taylor (2015:1), the commercial use (trade) of wildlife resources must contribute to the ongoing survival of the species in the wild (free-roaming populations). An economic model should not be developed solely for the benefit of management systems that keep rhinos in small camps, as this will shift the risk of poaching to other areas. The economic model must also work for state-protected areas, extensive private game ranches and reserves, as well as other rhino range states (Namibia, Zimbabwe, Botswana and Kenya.).

‘t Sas-Rolfes (2012:14) argues that the establishment of an appropriately structured legal trading regime for rhino horn may provide a more effective and lasting solution to the rhino poaching problem, for three reasons:

- Firstly, it would bring trade into the open.
- Secondly, by providing a significantly increased and potentially ongoing source of supply, the incentives for speculative stockpiling by criminals would be greatly reduced, if not altogether removed.

- Thirdly, by becoming active market participants, legal suppliers of rhino horn gain a new source of income, which they are able to re-invest in improved protection and breeding. Legal owners and custodians also have a significant competitive advantage over poachers and illegal suppliers – namely, defensible legal rights and, in most cases, privileged physical access to, and control of, their stocks.

According to Thomson (2012:3), it is important to realise that what is happening now (trade ban) is not sustainable. Any new solution that might work – and that might turn the tables on the poachers, therefore, is worth a try.

Speculators are likely to cease buying horn when they realise that a legal trade will provide a large and consistent supply of horn which will satisfy annual demand, and that there will be little scope for price appreciation (Eustace, 2014:2).

The only way that the market can obtain horn now is by killing rhinos, and criminals make all the money. A legal trade, on the other hand, would mean that parks and conservation would make the money, and that is where the money rightfully belongs (Eustace, 2012:1).

If international trade is legalised, stockpiles of horn may be eligible for controlled sale to the Far East. Protected areas holding rhino will, without harming the animal, be able to harvest the horn every three years, as it continually grows back. If managed correctly, large amounts of funding could be injected into the struggling wildlife conservation industry (Mander, 2012:1).

Support for a trial of the legal trade of horn by big game parks in Swaziland (Reilly, 2015a:6), is based purely on what it sees as the remaining option to save rhinos from extinction, knowing that the 38-year-old ban is failing to do so:

It will never be known if lifting the ban will work until it is tried. If this is to be an option, it must be tried while there is still a cushion of rhinos to test it on.

According to Biggs *et al.* (2013:2), evidence from studies of other wildlife products suggests that legal trade can reduce the incentive for poaching, if –

- regulators can prevent the laundering of a threatening level of illegal supply under the cover of a legal trade.
- the legal supply can deliver the product more easily, reliably and cost-effectively than the illegal trade.
- the demand does not escalate to dangerous levels as the stigma associated with the illegality of the product is removed.
- legally harvested horns from live animals can substitute for horns obtained from wild, poached animals.

Communities must be encouraged to set aside a suitable area of land where they can start making money from rhinos by breeding and selling them, eventually harvesting the rhino horn on a regular basis – with the expectation that there will be opportunities for a legal trade in rhino horn (Msimang, 2015:8).

According to Knight (2015:13), South Africa would need to show an improvement in some basic activities – many of which, in fact, led to South Africa’s conservation success in the very first place: The following is a summary of those activities:

- An improvement in the basic underlying governance of South Africa's conservation estate and law enforcement establishment.
- South Africa needs good, reliable information on rhino populations and rhino horn stocks.
- There is a need for greater self-regulation of professionals and members in the wildlife industry, to show the world that South Africa is serious about cleaning up its tarnished image.
- South Africa would reassure parties that rhino populations in non-trading states would not be under greater threat of poaching.

Wiltshire (2015a:40) states that –

scientific methodology suggests that experimentation is the best method for removing uncertainty, and a controlled legal trade with a regular, reliable supply would provide the opportunity to better determine price and underlying demand.

It is also evident from the interviews, questionnaires and the literature, that most of the supporters of a legal trade realise that legal trade on its own cannot be a solution:

“Multi-pronged approach. Education (especially in the East); strict enforcement measures; centralising permits, tourism levies to ensure funds are provided for conservation and enforcement; opening horn trade (even if its for an initial trial period); expanding rhino ranges in South Africa, Africa and overseas; farming rhino, dehorning small populations” (P1)

“What needs to happen is to increase and enforce all existing interventions as well as create a legitimate supply” (P7)

“There is no single solution. To stop poaching the following issues will have to be addressed: address poverty, sustainable use and law enforcement” (P16)

According to Knight (2015:12), the call from certain sectors in the private and conservation industry, that the legal trade in horn is the perfect 'tonic' to cure this 'poaching ill', is simplistic:

It could certainly be an important option (on top of already existing commercial value generated through tourism and limited trophy hunting). However, legalising trade in horn will not be a single solution to the problem.

Jones (2015:16) states the following:

It has never been stated that trade is the simple or only solution; it must form part of a composite management plan that includes better law enforcement, international cooperation, community involvement and beneficiation, to name a few strategies.

4.2.4.1.1.3 *Community conservation*

A sub-theme that emerged several times during the interviews, and which also emanated from the questionnaires and the relevant literature, was community conservation. This issue was already discussed in section 2.7.2, hence the researcher will, for the purposes of Chapter 4, only deal with the comments of the participants, as most of the participants who supported legal trade, also supported community conservation:

“ . . . protectionism is failing as it's not taking into consideration the needs of people who live in Africa and is dictated to Africa from Westerners. It will give incentives for people to protect rhino again, and could help communities to play a part in conservation as opposed to being recruitment grounds for poaching” (P7)

“ . . . ways should be found of the local communities receiving income from the wild life which is susceptible to poaching and trafficking. The government should be encouraging the emergent black farmers and the communities to get involved in rhino farming to increase the numbers and range of rhino in Africa” (P9)

“In the rural communities, given the number of people the income generated by legal trade in rhino horn will be able to address poverty” (P16)

“One of our neighbouring communities has land available to accommodate more than 1,000 rhinos. If they can generate money from 1,000 rhinos, just imagine what they can do with that money. It is something positive and it will encourage them to look after the rhino” (P17)

According to Maenetje (2015:20), the sustainable use of rhino is a key issue in terms of promoting the socio-economic upliftment of the Balepye and Selwane communities in Limpopo:

Communities that are invested in the survival of the species will be less likely to offer support to poachers in exchange for money. In fact, if similar projects are allowed to flourish in the country, we will be able to push back poaching and actually take the fight to the poacher.

It must be borne in mind that community conservation does not only relate to sustainable utilisation, but to recruitment of poachers as well. As Thomson (2012) states: *“The most important long term solution to poaching in South Africa, is to eliminate poverty in all those communities that harbour poachers”*. This is also in line with the media release by the Minister of Environmental Affairs (referred to in section 2.7.2), namely that poachers come from the communities:

It is also from these communities, many of them underdeveloped and neglected, that the natural instinct to protect wildlife may be superceded by concerns for money because they are simply too poor. To ensure the long-term sustainable utilisation of wildlife, it is important that communities are involved – not only by creating an enabling environment that facilitates rhino ownership and management for disadvantaged communities, but also through creating economic alternatives to poaching, within these communities.

Community conservation goes hand-in-hand with ownership (which has already been discussed in section 2.3), as community conservation without allowing for ownership of rhinos to the community, will be a futile exercise.

4.3 SUMMARY

This chapter presented the results of the semi-structured interviews. The views of the participants regarding the causes of the increase in poaching, were discussed. There was also referral to the relevant literature in this regard. This is deemed important, as the source of the problem needs to be identified, in order to find a suitable solution.

Findings pertaining to concurrent strategies as well as the CITES ban on international trade in rhino horn were also covered, whereafter sustainable use as a possible solution was discussed.

Chapter 5 focuses on the conclusions, based on the findings, and recommendations for further research are offered.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

Conclusions, based on the findings of this research, are presented in this chapter. Recommendations for further research and investigation are also offered.

The variety of responses emphasises the fact that rhino poaching is not a single faceted issue; it is complex, and interacts with all sectors of society – from rhino owners and local communities to rhino custodians and government.

Nieuwenhuis (2015:56) states the following:

In qualitative research, we maintain that knowledge should emerge out of the local context and should privilege the voice of the ‘insiders’, taking into account what people say, do and feel, and how they make meaning of the phenomena under investigation. Patterns, trends and themes should therefore emerge from the research process, and the role of the researcher should be to understand real-life situations from the point of view of the insider, rather from the point of view of the outsider.

The research findings revealed that both the pro-trade and anti-trade supporters accept that there is a market for rhino horn, leading to a number of implications (referred to in section 2.10):

- The fact that this market is – for most part – illegal under CITES, does not mean that it does not exist. Declaring the trade in rhino products “illegal” has not closed the market down.

- An illegal market may have some unique characteristics, but dynamically it still behaves in much the same way as a legal one. A product's illegal status does not negate the laws of supply and demand. It does, however, make it harder to analyse.
- From the perspective of the participants in the market (suppliers and consumers) there is probably little about rhino products that is innately different from many other products: it can be supplied profitably, and it satisfies particular wants or needs.

5.2 OBJECTIVES OF THE STUDY

The objectives of the study have been met by conducting a literature review, establishing a suitable theoretical framework, and adopting appropriate research methods for collection, analysis and presentation of the sources of data.

A discussion of the legal position and the concept of sustainable use, were covered in the literature review in Chapter 2, in order to give a background of the framework of conservation – more specifically, rhino conservation.

The effectiveness of strategies to prevent poaching were evaluated during the literature review, as well during the process of data analysis in Chapter 4. This process also contributed towards the reliability and validity of the research.

The effectiveness of the ban on international trade in rhino horn, and the viability of legalising international trade in rhino horn, were also investigated during the literature review, as well as during the process of data analysis in

Chapter 4. All of the aforementioned culminated in answering the research questions.

5.3 METHODOLOGICAL CONSIDERATIONS

One of the reasons why the researcher decided on the qualitative method of research, was the need to corroborate, validate and explain the information collected during the study. Qualitative research proves useful when one needs to supplement, validate, explain or interpret the collected information (Miles & Huberman, 1994:10). Furthermore, the use of interviews, questionnaires and literature research contributed to the trustworthiness of the study.

In accordance with the qualitative research design, the researcher was the primary instrument for data collection and analysis. The use of semi-structured interviews and questionnaires with open-ended questions, in this study, created the opportunity for participants to contribute to richer detailed answers. However, due to the sensitivity of the research topic, some of the participants could not respond to certain questions. This aspect, as well as the fact that certain NGOs were reluctant to participate, was a limitation to the study.

The findings of this study can be generalised to larger samples, due to the composition of the sample. It has already been mentioned in Chapter 3 that the participants in this study represent owners and custodians of approximately 80% of South Africa's rhino population.

The researcher complied with the requirements of sampling adequacy, supplemented by a literature research; hence sufficient data to account for all

aspects of the research has been obtained. The different viewpoints of participants were compared with the data collected during the literature research, in order to ensure validity.

5.4 RESEARCH PROBLEM

The research problem has already been dealt with in section 1.3 of this research, namely: *“Despite the ban on international trade in rhino horn, poaching of rhino has increased. Poaching syndicates have capitalised on the CITES ban”*. (The CITES trade ban will be discussed in section 5.6).

The following reasons for the increase in poaching emanated from the interviews and the questionnaires:

- Poor law enforcement
- Moratorium on domestic trade
- Money driven
- Increased demand
- Poverty and unemployment

Poor law enforcement was indicated by most of the participants as a cause of the increase in rhino poaching.

The research revealed that corruption remains a challenge to effective law enforcement. Economic underperformance and poor governance make the resource wealth of many developing countries vulnerable to corruption. It has also been indicated that where corruption is highest, trafficking is pervasive,

and corruption facilitates the range of transactions that need to happen throughout the trafficking process.

The involvement of organised crime in wildlife trafficking is clearly related to corruption. Corruption on the part of government officials, and the involvement of officials in supplying information, were also raised as a concern by participants as well as experts in rhino conservation. Bribery and corruption in South Africa's neighbouring countries was also raised as a concern.

Most of the participants and experts in rhino conservation expressed concerns about capacity shortages and the lack of resources. A lack in capacity of law enforcement officers, prosecutors and magistrates, were mentioned, and the government is blamed for not making provision for the necessary finances. The government is also blamed for a lack of political will.

It was common knowledge among participants and experts in rhino conservation, that the risk of being caught is low, due to the high vacancy rate of law enforcement officers. The situation is aggravated by inadequate domestic and international collaboration.

Although most of the participants were of the opinion that the punishment does not fit the crime, the danger exists that the opinions of participants, as owners and custodians of rhinos, could be influenced by emotion.

Harms JA stated the following in *S v Mhlakaza* 1997 n1 SACR 515 (SCA) (referred to in section 2.6.5):

The object of sentencing is not to satisfy public opinion but to serve the public interest. A sentencing policy that caters predominantly or

exclusively for public opinion is inherently flawed. It remains the court's duty to impose fearlessly an appropriate and fair sentence even if the sentence does not satisfy the public.

It has been found that most of the participants were of the opinion that certainty of punishment, rather than the severity of the penalty, would deter poachers. Most of the participants were concerned about poor investigations. The aforementioned is also in accordance with Rabie and Strauss (1985:37), where it was stated that the success of general deterrence is more dependent upon the relative degree of certainty that punishment will follow the commission of a crime, than upon the severity of the penalty. In other words, general deterrence is more a function of law enforcement than it is of sentencing.

It has already been shown in section 2.6.2, that a poacher will always consider the risk, and weigh up the risk against the reward. If the statement by Eustace (2011:1) is considered to be correct, namely that there is a 90% chance of a poacher avoiding any penalty, then it is obvious that this is one of the reasons for an increase in poaching.

The moratorium on domestic trade in rhino horn as a possible reason for the increase in rhino poaching, has already been discussed in section 2.5.1; however, this research has revealed that participants and experts in rhino conservation hold different opinions on whether or not the moratorium was responsible for the increase in rhino poaching.

Most of the participants supported the lifting of the moratorium on domestic trade, but added that it would not have any effect, unless the ban on

international trade was also lifted. Participants who supported a legal trade were all in agreement that there must be an end-user. If it is accepted that the moratorium did not cause an increase in poaching, the fact that South Africa has no end-users could be the reason why the moratorium did not cause an increase in poaching.

This research revealed that by removing legal trade, trade was pushed underground, where it created a vast illegal market dominated by crime syndicates. The price of rhino horn increased because of the increase in demand without any legal supply, and it has become a lucrative business for organised crime investors.

Findings indicate that an increase in demand was responsible for an increase in poaching. This point of view is also supported by experts in rhino conservation. Once again, the inelastic relationship between the increasing demand and restricted (illegal) supply influences the high black market prices of rhino horn, making the product attractive to criminals and organised crime syndicates.

Most of the participants were in agreement that the poaching crisis in Africa is facilitated by poverty. The aforementioned is also supported by experts in rhino conservation (Hanks, 2015b:2; Roe, 2008:1). It is also evident that all the reasons for an increase in poaching, mentioned in this chapter, are closely linked to an increase in price.

Considering the reasons for the increase in poaching, the following will have to be addressed, in order to curb poaching: increased security (section 5.5.4), international trade ban (to be discussed in section 5.7 as part of sustainable

use), increased demand (section 5.5.5) and poverty (community conservation) (section 5.7.3), while the concurrent strategies to curb poaching will be discussed in section 5.5.

5.5 CONCURRENT STRATEGIES

The purpose of the discussion of the findings of the concurrent strategies, is to establish whether these strategies have been successful in order to limit poaching, or if an alternative approach should be implemented.

5.5.1 Dehorning

Findings from the current research indicate that dehorning is more suited for use in smaller reserves and game ranches with few rhino; however, it could shift the threat of poaching from one area to another.

Poaching pressure is likely to be reduced by either decreasing the reward to the poachers through dehorning, or increasing the risk and difficulty associated with poaching. Findings also indicate that the permitting system for possessing, transporting and storing the horns appears to be onerous, and imposes security risks. It is also considered important that dehorning would only be effective if poachers were aware of the fact that rhinos were dehorned.

It was also stressed that security/law enforcement should be effective, and that dehorning is not a solution in itself, and should not be done in isolation.

5.5.2 Poisoning of the horn

The research revealed that most of the participants were of the opinion that poisoning of the horn would not deter poachers. Many of the participants referred to the fact that rhinos have been poached, despite the horn being poisoned. The aforementioned view is also supported by Duffy *et al.* (2013:7).

Participants who were of the opinion that poisoning of the horn can limit poaching, supported it on condition that it must be made known. The legal consequences of poisoning have already been discussed in section 2.6.3. Should international trade be legalised, contaminated horn could be released onto the market. This was a concern of some of the participants.

5.5.3 Translocation

Findings indicated that most of the participants supported translocation, on condition that rhinos are translocated to safer places and to a suitable habitat. Participants had differing views pertaining to what they regard as a safer place; however, it has been indicated that safety goes hand-in-hand with security.

Translocation is also in line with the South African government's strategic management approach, referred to in section 2.2.1.5.3.

5.5.4 Increased security

The literature review (Hall-Martin *et al.*, 2008:39; 't Sas-Rolfes, 2012:12) revealed that increased security measures are likely to yield greater success than law enforcement measures.

This research further revealed that all the participants (rhino owners and custodians) have increased their security measures – which include the appointment of more rangers to do “foot patrols”. They have all experienced a considerable increase in security costs. It is clear that increased security is also a prerequisite for dehorning and translocation.

Findings in the current research confirmed that the costs of keeping rhino have significantly increased, and that the costs greatly exceed the benefits. This has caused a number of rhino owners to sell their rhino (Jones, 2014:129).

5.5.5 Increased demand

It is clear that increased demand can only be addressed either by demand reduction campaigns or by an increase in supply. All the participants (except one) were of the opinion that demand reduction campaigns cannot limit poaching.

The literature review revealed that demand reduction campaigns are mostly supported by some of the NGOs. However, experts are of the opinion that the likelihood of stopping the use of rhino horn is very small (Cheung, 1995:152; Hanks, 2015b:9; 't Sas-Rolfes, 2012:13). The research further indicates that most of the participants do not have any trust in these NGOs. Findings also indicate that a demand reduction campaign cannot be run alongside a legal trade.

5.6 CITES TRADE BAN

The majority of the participants were of the opinion that the ban on international trade in rhino horn was one of the reasons why the CITES fight against illicit wildlife trafficking is failing. Some of the participants were even of the opinion that the CITES trade ban was one of the reasons for the increase in poaching. The study also revealed that some of the NGOs are blamed for the ban on international trade in rhino horn. This is confirmed by experts in rhino conservation (Jones, 2015:15; Reilly, 2015a:3; Thomson, 2015:33).

The effectiveness of the ban on international trade in rhino horn is dealt with in section 2.9 of the literature review. Although supporters of the ban argue that there has been insufficient regulation of internal markets in individual consumer countries, this research confirmed that the CITES trade ban is a failure, and has pushed the trade underground, and onto the black market. This viewpoint is confirmed by Du Toit (2013:190), Emslie and Brooks (1999), Mander (2012:2), 't Sas-Rolfes (1997b:2), 't Sas-Rolfes (2011a:18), and Milliken and Shaw (2012).

5.7 SUSTAINABLE USE

The literature regarding the question whether “the sustainable use approach can save the South African rhinos”, is discussed in section 2.7.4. Findings from the current research indicate that “sustainable use” is widely considered as a possible solution to the poaching of rhinos. This approach is also in accordance with the World Conservation Strategy, as well as the CITES Strategic Vision (referred to in section 4.2.4.1). Legal trade is also accepted as a form of sustainable use; furthermore, legal trade in rhino horn is not

possible, unless the ban on international trade is lifted. This also refers to the second research question, namely “Can the lifting of the ban on international trade in rhino horn discourage poaching and save the rhino from extinction?”. This research question will be discussed in section 5.8.

5.7.1 Legal trade

The research revealed that the anti-trade supporters, mostly NGOs, have the following arguments against a legal trade:

5.7.1.1 Will South Africa be in a position to find a trading partner?

Most of the participants indicated that South Africa will be in a position to find a trading partner; however, the trading partner would have to comply with certain conditions. The trading partner country needs to –

- agree to a legalised trade under strict conditions.
- abide by regulations in respect of dealing in legal horn.

As this finding is based on the opinions of participants who have not formally investigated the possibility of a trading partner, this issue needs to be further investigated by an organisation such as the PROA or WRSA, in collaboration with the South African government.

5.7.1.2 Will South Africa be in a position to regulate a system of legal trade nationally and internationally?

The research revealed concerns about South Africa’s ability to effectively regulate a system of legal trade, due to corruption. However, most of the participants in this study were of the opinion that South Africa would be in a

position to regulate a system of legal trade, either nationally or internationally, on condition that it is done in a transparent and accountable manner, free of corruption. The aforementioned view is also supported by Biggs *et al.* (2013:3), Eustace (2011:3) and 't Sas-Rolfes (2015:27). Rhino owners and custodians are already complying with the norms and standards for the marking of rhinos and rhino horn, as well as those for the hunting of rhino for trophy hunting purposes (South Africa, 2012).

5.7.1.3 Will it be possible to keep illegal rhino horn out of the legal market?

The study revealed a concern about the possibility of keeping illegal rhino horn out of the legal market; however, most of the participants were of the opinion that although it would not be possible, it could be limited.

5.7.1.4 Will legal trade of rhino horn have other negative impacts on the conservation and well-being of the species?

The study revealed a concern, mostly by NGOs, about the negative impacts on the conservation and well-being of the species; yet, as stated by Biggs *et al.* (2013:3), there is no empirical evidence that supports this view.

Most of the participants were of the opinion that legal trade in rhino horn will not have other negative impacts on the conservation and well-being of the species. This view is also supported by Biggs *et al.* (2013:3), Eustace (2011:4) and Eustace (2014:2).

5.7.1.5 Will South Africa be in a position to meet demand in rhino horn on a continuous basis?

The study revealed a concern, mostly by NGOs, about the ability of South Africa to meet the demand in rhino horn on a continuous basis. However, most of the participants (rhino owners and custodians) were of the opinion that South Africa would be able to meet the demand, on condition that the current stockpiles are used as well. This view is also supported by 't Sas-Rolfes (2012:15).

The study has also revealed that little is known about the market for rhino horn, and further research in this regard will have to be done. This is also in line with the opinion of 't Sas-Rolfes (2015:6), who stated that the immediate effect of potential trade legalisation cannot be predicted, as not enough is known about the current markets for rhino horn.

5.7.2 Conclusion regarding pro-trade arguments

The study revealed that legalising international trade in rhino horn can limit poaching. The majority of participants supported this view – which is also supported by experts in rhino conservation (Biggs *et al.* 2013:2; Eustace, 2014:2; Hanks, 2015b:11; Mander, 2012:1; Reilly, 2015a:6; 't Sas-Rolfes, 2012:14; 'Sas-Rolfes, 2015:26; Thomson, 2012:3).

The following advantages of legalised trade were raised by participants, and confirmed by experts in rhino conservation:

- (i) It will give incentives for people to protect rhino again, as the animal will be worth more than the horn.

- (ii) It could help communities to take part in conservation, as opposed to being recruitment grounds for poachers.
- (iii) Supply will increase, forcing prices to drop.
- (iv) If trade is legalised, the value of illegal stockpiles will drop, forcing illegal investors to sell.
- (v) It will provide the necessary funds for conservation, which can also be used for anti-poaching. More resources will be available to protect the rhino.
- (vi) If crime syndicates are provided with a more convenient and reliable supply, they will gradually move to the legal trade route.
- (vii) If the price of rhino horn drops, the reward for the poacher will be too low compared with the risk, hence the poacher will be discouraged from taking the risk.

The literature review (Ferreira *et al.*, 2014:6) indicated that rhino poaching may be best addressed by management strategies that generate benefits at least equal to, or higher than, the associated risks involved in the supply of horn to the market. Overall, unrestricted international trade in rhino horn produced the best risk-benefit score, while the worst case scenario, in which risks substantially exceeded benefits, was provided by the ban on international trade.

5.7.3 Community conservation

The research revealed that community conservation plays a prominent role in anti-poaching, especially that of neighbouring communities of national parks and provincial game reserves. These protected areas usually have disadvantaged and underdeveloped local communities as neighbours. These communities are currently excluded from the benefits derived from the neighbouring protected areas, making them susceptible to being recruited as poachers.

The research further revealed that economic alternatives to poaching should be created within these communities. The example of the Balepye and Selwane communities in Limpopo shows that it is possible for communities to become involved in rhino conservation, and to generate income in order to alleviate poverty.

5.8 RESEARCH QUESTIONS

(i) The first research question of this study was whether the CITES ban on the international trade in rhino horn provides an effective measure to stop/prevent poaching. A literature study was conducted, in order to establish the effectiveness of the CITES ban. Most of the participants in this study were of the opinion that the CITES trade ban was a failure. This view was also supported by experts in rhino conservation.

The irony is that as CITES measures are progressively implemented and tightened, the trade becomes even harder to monitor and control – which leads to calls for even tighter restrictions (‘t Sas-Rolfes, 2011a:19). According

to 't Sas-Rolfes (1997b:27), it is likely that the CITES ban created a perceived supply shortage, which, in turn, led to the dramatic rise in prices in the late 1970s. Asian traders and traditional doctors, fearing that their supplies of horn were now under threat, probably stockpiled in anticipation of future shortages, placing considerable upward short-term pressure on prices.

According to 't Sas-Rolfes (2011a:18), a trade ban does not end trade. Making it illegal simply raises the risks – and, therefore, the costs of trading. In theory, if all consumers are law-abiding, a trade ban should reduce demand. In practice, consumers are not always law abiding. If demand for a product persists after a trade ban, the black market supply will continue if the price is right.

Trade bans do create a measure of control over commodity trade: they place it in the hands of organised crime. In the wildlife trade, bans can create illegal industry structures that are more concentrated and powerful, harder to control, and more likely to overexploit the resource than before ('t Sas-Rolfes, 1997b:23).

Supporters of the ban argue that there has been insufficient regulation of internal markets in individual consumer countries, and that additional resources are required for anti-poaching measures to protect remaining populations. If sufficient effort is made, and the necessary resources are made available, these measures should succeed (Martin & Martin, 1991; Vigne & Martin, 1993).

't Sas-Rolfes (1993:7) argues that it has been a number of years since the first anti-trade measures were taken, and considerable resources have

subsequently been spent pursuing this strategy, but they do not appear to have been sufficient.

According to Emslie and Brooks (1999) and Milliken and Shaw (2012), trade in rhino horn is continuing, despite the ban on commercial trade. CITES trade bans have not succeeded in stopping the rhino horn trade, and a considerable reduction in the populations of black rhino has occurred, even though it is included in Appendix 1, indicating that the international trade bans alone have not been effective.

According to Conrad (2012), while trade bans can work in the short term, they can have the reverse outcome to what was intended, if perpetuated beyond their utility and in “perfect storm” circumstances. The conditions for the “perfect storm”, all of which are currently present in the case of rhino, are the following:

- Price-insensitive buyers in the market
- High commercial value
- Development of trade, both legal and illegal
- Public ownership reduces incentives to protect rhino
- Conflict for resources with humans
- Inadequate enforcement of trade bans

‘t Sas-Rolfes (1993:62) is of the opinion that the existing policy of the CITES ban on the trade in horn certainly does not appear to be effective in preventing the overexploitation of rhinos. It is also economically inefficient,

because it denies the possibility of mutually beneficial trade between rhino custodians and consumers of rhino products. It is inequitable, because the potential beneficiaries are mostly citizens of developed countries where rhinos do not occur, while the costs are borne by the developing countries where the rhinos occur, and where the products are in demand ('t Sas-Rolfes, 1993:62).

A comparative study has also been done regarding trade bans in respect of other products. Anti-trade supporters usually refer to the ivory trade as an example; however, in the case of ivory, the elephant has to die from natural causes or be killed, in order to provide ivory to the market. In the case of rhino horn, the horn can be harvested on a sustainable basis. Vicuña was on the brink of extinction until the trade ban on vicuña was relaxed by CITES. The prohibition of alcohol in the U.S. between 1920 and 1933, caused an increase in alcohol consumption instead of a reduction. The deer numbers in New Zealand have grown because of sustainable use (legal trade).

The research therefore revealed that the CITES ban on international trade in rhino horn does not provide an effective measure to stop/prevent poaching.

(ii) The second research question of this study asked if the lifting of the ban on international trade in rhino horn can discourage poaching and save the rhino from extinction. In order to contextualise this research question, one of the advantages of a legalised trade as mentioned by the pro-trade supporters, must be borne in mind: If the price of rhino horn drops, the reward for the poacher will be too low, compared with the risk, hence the poacher will be discouraged from taking the risk.

This research revealed that the anti-trade supporters were of the opinion that the trade ban and demand reduction campaigns were the only methods of preventing or reducing poaching; however, no supportive evidence could be submitted in this regard.

Pro-trade supporters, however, submitted reasons why a trade ban and demand reduction campaigns did not succeed in reducing poaching. On the other hand, anti-trade supporters submitted reasons why a legal trade in rhino horn would be ineffective, while pro-trade supporters provided various counter-arguments. The latter also based their arguments on the economic principles of supply and demand. A comprehensive literature review in this regard was done in section 2.10.

The research revealed that pro-trade supporters would rely on current stockpiles, in order to level the playing field between illegal and legal supply, whereafter rhino horn will be supplied on a sustainable basis. An increased and sustainable source of supply should also reduce the incentives for speculative stockpiling by criminals, because a legal supply would deliver rhino horn more reliably and cost-effectively than the illegal trade.

Most of the participants and experts in rhino conservation were of the opinion that a legalised trade would make more funds available for rhino owners, custodians and government. These funds could be utilised to provide for increased security and law enforcement, and to address the lack in capacity as identified by participants in this research. Funds would be available for rhino owners, custodians and government, instead of for the poacher, and at the same time the risk for the poacher would increase.

As indicated in section 2.10, South Africa still needs to establish a credible trading partner. All the former rhino horn consumer countries in Asia, as well as Vietnam, have effected legal bans against the trade in rhino horn, and most have moved to completely remove rhino horn as an approved ingredient in their traditional medicine. This issue has been identified as an obstacle in the way of legal trade, which will have to be investigated by an organisation such as the PROA or WRSA, in collaboration with the South African government.

The research suggested that the trading partner country should:

- agree to a legalised trade under strict conditions, and
- abide by regulations in respect of dealing in legal horn.

The research indicated that on condition that South Africa find a credible trading partner, the lifting of the ban on international trade in rhino horn, can discourage poaching and save the rhino from extinction.

(iii) The third research question reads as follows: “How can legal trade be regulated?” The research identified this as a concern raised by the anti-trade supporters. It has already been indicated in section 5.7.1.2, that most of the participants in this study (owners and custodians) were of the opinion that South Africa will be in a position to regulate trade, on condition that such a system is –

- transparent and accountable.
- free of corruption.
- developed in order to prevent laundering.

Corruption was identified as one of the most important reasons for an increase in poaching, and is a concern to the participants to this study, the experts in rhino conservation, as well as the NGOs; hence a system of legal trade needs to be developed in such a way that it will curb corruption.

Participants and experts in rhino conservation showed support for a regulated trading system through a Central Selling Organisation (CSO) and the establishment of a centralised database. It was also revealed that rhino owners and custodians are prepared to participate in such a system and provide the necessary information required. A number of participants have confidence in the system that is currently being used in the diamond trade. Du Toit (2013b:10) has developed a process called the the *Bicornis* Process, to ensure that the product is legally obtained and sold as blood-free horn. The cornerstone of this system is traceability, and this system can be used as a basis for further development.

5.9 SUMMARY OF THE CONCLUSIONS

It is clear from the research that the CITES ban on international trade in rhino horn is failing to stop or limit poaching of rhino.

Currently, under the trade ban, the poachers and criminal syndicates are taking all the profits, while the rhino owners and custodians carry all the costs of keeping and protecting rhinos. This disparity is causing a disinvestment in rhinos by the private sector. The poaching pressure has caused rhinos to become a liability, instead of an asset, to private rhino owners.

An evaluation of the concurrent strategies to prevent poaching revealed that some of these strategies (dehorning and translocation) can help to limit poaching; however, these strategies in themselves do not represent a solution to the poaching crisis. A concern regarding law enforcement has been identified – especially a lack of capacity, which leads to poor investigations.

The research indicated that the risk to the poacher must be increased, while the reward to the poacher must be reduced. The risk can only be increased by increased security and effective law enforcement, whereas the reward can only be reduced by lower prices for rhino horn. Prices can be lowered by an increase in supply, by means of a legal trade – in other words, sustainable use.

The research revealed that poverty was one of the reasons for an increase in poaching, as the poaching crisis is facilitated by poverty. Poverty reduction depends on sustainable resource use. The research therefore identified a need for local communities to be involved, and share in the benefits of sustainable use.

This research has identified legal trade as a possible solution; however, legal trade will only reduce, not eliminate, the incentives to poach; hence preventative security measures and effective law enforcement are also prerequisites. Legal trade can never be dealt with in isolation. It is clear that there is still a need for concurrent strategies such as preventative security, law enforcement, translocation and dehorning.

Legal trade should be transparent and free of corruption, and this research suggests the establishment of a CSO and a centralised database, managed

by the private sector in collaboration with the South African government. The literature contains a number of examples of how such a system could be implemented and managed. The Technical Advisory Committee (TAC), appointed by the Minister of Environmental Affairs in 2015, is mandated to investigate the potential models/mechanisms for trade.

The success of a legal trade will depend on how the legal market is established. The demand for rhino horn is currently unknown. If trade is legalised, demand can be monitored relative to supply, enabling rhino owners to respond immediately to changing market conditions related directly to consumer demand. The establishment of a well-managed legal market in rhino horn would enable conservationists to monitor market trends, whereas the present situation, under a trade ban, is creating uncertainty.

This summary can be concluded with the following statement by Child (2012:3):

The sustainable use approach suggests that rhinos (and South Africa's economy and employment figures) would benefit by replacing a failed no-trade regulatory approach with a carefully designed policy experiment to trade rhino horn through carefully configured and simple (not simplistic) institutions.

5.10 RECOMMENDATIONS

The CITES ban on international trade in rhino horn has failed to stop or limit rhino poaching, hence a legal trade deserves consideration as an alternative approach. Legal trade is in line with the strategic vision of CITES. In order to

approve a legal international trade in rhino horn, South Africa will have to submit a proposal to CITES and obtain a two-thirds majority vote from member countries in favour of the proposal.

South Africa will also need to establish a credible trading partner. It is suggested that an organisation such as the PROA or WRSA, in collaboration with the South African government, investigate this matter.

An effective trading system needs to be developed, in order to prevent laundering and to distinguish between legal and illegal products. The trading system should make provision for a CSO and a centralised database, as well as trading protocols to be used in both South Africa, as the source country, and in the consumer country. The necessary legislation will have to be drafted, in order to make provision for the enforcement of the aforementioned. In this regard, a legal analysis should be conducted, in order to identify the necessary control measures.

One of the main arguments by pro-trade supporters was the fact that legal trade will make more money available for conservation, hence a trading system should make provision for a certain amount of money to be allocated for conservation.

The research revealed a lack of information pertaining to stockpiles. A system needs to be developed, in order to encourage rhino owners and custodians to provide this information to be kept in a centralised database. Participants in this research have already indicated that they are prepared to provide all the necessary information, on condition that international trade is legalised.

Corruption has been identified – not only as one of the reasons for the increase in poaching, but also as an obstacle in regulating legal trade. The South African government will have to focus on the eradication of corruption, in order to establish a well-regulated market for rhino horn, should the international trade in rhino horn be legalised. Furthermore, law enforcement and intelligence will have to be improved.

Legal international trade does not mean that concurrent strategies such as security, law enforcement, dehorning and translocation can be thrust aside. As far as law enforcement is concerned, South Africa's focus has, in the past, largely been on reactive strategies. These should be changed to a more proactive strategy. This will only come about through an increased focus on improved intelligence collection, its analysis, and the resultant implementation of strategically focused activities. The lack in capacity should also be addressed, in order to ensure better investigations, better prepared prosecutions, and a more efficient judicial system. The risk to the poacher must be increased.

Property rights in live rhino will have to be strengthened, in order to facilitate the involvement of local communities, and to create economic incentives for communities adjacent to protected areas. A controlled legal trade should encourage local communities to obtain and maintain their own rhino populations, which should help to increase rhino numbers. This is also in line with the South African government's Integrated Strategic Management approach.

5.11 RECOMMENDATIONS FOR FURTHER RESEARCH

In answering the research questions (section 5.8), the need for research of the market in rhino horn was identified. No formal research has been done in this regard. Experts in rhino conservation, owners of rhino, and custodians, are all speculating about the size of the market. The fact that the current market is illegal, makes it difficult to establish a reliable figure. It should also be borne in mind that the current (illegal) market probably differs from the potential legal market, if international trade is legalised.

A lack in confidence in some of the NGOs, especially those involved in animal rights and anti-poaching, has been identified. According to Child (2015:210), uncomfortable questions need to be asked about how much money was raised, by whom, and what happened to it:

We need to remove the parasitic burden on wildlife conservation that this massive 'industry' represents and make sure that every cent of this money is reinvested in wildlife conservation at ground level, especially where it benefits communities and landholders who live with wildlife.

The said questions need further investigation, in order to address the concerns raised by participants, and which are also shared by experts in rhino conservation.

5.12 RESEARCH CONTRIBUTION

The purpose of this research is to contribute towards rhino conservation by exploring an alternative approach to limiting rhino poaching, and saving the rhino from extinction.

The possibility of legalising national (domestic) trade in rhino horn has already been investigated by the Department of Environmental Affairs (Taylor *et al.*, 2014). No formal study has been done pertaining to the legalisation of the international trade in rhino horn.

The purpose of this study was to investigate the viability of legalising the international trade in rhino horn, and to interpret, as well as add some value to, the arguments already raised by experts in rhino conservation and other role players in this regard.

Legalisation of the international trade in rhino horn is a controversial issue; hence this research compared the arguments in favour of a legal trade with those against a legal trade, and investigated the effectiveness of the current approach, namely a trade ban.

5.13 CHAPTER SUMMARY

This chapter presented the conclusions to the research, as well as recommendations in mitigation of the research problem.

The research problem, research objectives and research questions, as identified in Chapter 1, were dealt with in detail. The chapter concluded with suggestions for future research, and the contribution of this research to the conservation of the rhino populations of South Africa.

LIST OF REFERENCES

Allen, C.M & Edwards, S.R. 1995. The sustainable-use debate; observations from IUCN. *Oryx*, 29(2):92-98.

Bailey, J.A. 1984. *Principles of wildlife management*. New York: Wiley.

Bailey, K.D. 1994. *Methods of social research*. 4th edition. New York: Macmillan.

Baldus, R.D. 2013. Hunters against wildlife poaching and trafficking. *African indaba*, 11(4):1-2, September.

Baldus, R.D. 2014. Poaching in Africa: causes and solutions. *African indaba*, 12(3):6-8, April.

Barnes, J., Burgess, J. & Pearce, D. 1992. Wildlife tourism. In: Swanson, T.M. & Barbier, E.B. (eds.) 1992. *Economics for the wildlife, wild lands, diversity and development*. London: Earthscan.

Bean, C. 2015. Why we are clearly allowed to enter into Mozambique to protect the Rhino: *Presentation at the proceedings of the Committee of Inquiry into Rhino Poaching, Kempton Park, March 2015*. [Article in possession of researcher, as part of presentation material].

Bennett, E.L. 2015. Legal ivory trade in a corrupt world and its impact on African elephant populations. *Conservation biology*, 29(1):54-60.

Benson, D.E. 2004. Hunting adds value to nature management and conservation. *Game and hunt*, 10(3):40.

Berdie, D.R.S. & Anderson, J.F. 1974. *Questionnaire*. Metuchen, NJ: Scarecrow Press.

Biggs, D., Courchamp, F., Martin, R. & Possingham, H.P. 2013. Legal trade of Africa's rhino horns. *Science policy forum*, 339:1-3, March.

Brebner, K. 2013. Rhino conservation – is the effort to save rhino detrimental to other species? *Environment*, Issue 14:30-32, Autumn.

Buckley, R. (ed.) 2004. *Environmental impacts of ecotourism*. Wallingford, Oxon: CABI Publishing. (Ecotourism series, 2).

Bulte, E.H. & Damania, R. 2005. An economic assessment of wildlife farming and conservation. *Conservation biology*, 19(4):1222-1233.

Cambridge advanced learner's dictionary. 4th edition. 2013. s.v. "pachyderm". Cambridge: Cambridge University Press.

Campbell, R. 2013. *Horn of contention: a review of literature on the economics of trade in rhino horn; commissioned by IFAW, November 2013*. Melbourne: Economists at Large.

Cheung, J. 1995. Implementation and enforcement of CITES: rhinoceros conservation policy in Asia. *Pacific Rim law & policy journal*, 5(1):125-161, November.

Child, B. 2012. The sustainable use approach could save South Africa's rhinos. *South African journal of science*, 108(7/8):1-4.

Child, B. 2015. Domino effect. *Wildlife ranching South Africa*, Issue 3:207-211.

Child, B.A., Musengezi, J., Parent, G.D. & Child, G.F.T. 2012. The economics and institutional economics of wildlife on private land in Africa. *Pastoralism: research, policy and practice*, 2:18.

CITES see Convention on International Trade in Endangered Species of Wild Fauna and Flora

Clifford, N.J. & Valentine, G. (ed.) 2003. *Key methods in geography*. London: Sage.

Collins, A., Fraser, G. & Snowball, J. 2012. *Could a regulated market approach for rhinoceros horns work in South Africa/some practical issues and concerns?* Grahamstown: Rhodes University, Department of Economics and Economic History.

Conrad, K. 2012. *Trade bans: a perfect storm for poaching?* From: <http://tropicalconservationscience.mogabay.com> (accessed 24 October 2014).

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). 2013. *Report of the secretariat on the interpretation and implementation of the convention: species trade and conservation: rhinoceroses: Sixteenth meeting of the Conference of the Parties, Bangkok Thailand, 3-14 March 2013*.

Creswell, J.W. & Miller, D.L. 2000. Determining validity in qualitative inquiry. *Theory into practice*, 39(3):124-131.

De Vos, A.S., Strydom, H., Fouche, C.B. & Delport, C.S.L. 2011. *Research at grass roots: for the social sciences and human services professions*. 4th edition. Pretoria: Van Schaik.

Delport, C.S.L., Fouche, C.B. & Schurink, W. 2011. Theory and literature in qualitative research. In: De Vos, A.S., Strydom, H., Fouche, C.B. & Delport, C.S.L. (eds.) 2011. *Research at grass roots, for the social sciences and human services professions*. 4th edition. Pretoria: Van Schaik.

Department of Environmental Affairs see South Africa. Department of Environmental Affairs.

Department of Tourism see South Africa. Department of Tourism.

Douglas, L. & Alie, K. 2014. High-value natural resources: linking wildlife conservation to international conflict, insecurity, and development concerns. *Biological conservation*, 171:270-277.

Du Toit, J.G. 2013a. *The story of the white rhinoceros*. Krugersdorp: Kejafa Knowledge Works.

Du Toit, J.G. 2013b. *Special operating procedures for the trade in rhinoceros horn*. [Unpublished document, handed to researcher by author].

Du Toit, J.G., Van Rooyen, J. & Bothma, J. du P. 2010. Trophy hunting. In: Bothma, J. du P. & Du Toit, J.G. (eds.) *Game ranch management*. 2010. Pretoria: Van Schaik.

Du Toit, K. 2015. Ekonomie van renosters vol slaggate. *Landbouweekblad*, No. 1889, 30 Januarie. (Reeks oor renosters, deel 2).

Du Toit, R. 2011. Zimbabwe lowveld: dehorning experience. In: Daily, B.G., Greyling, A., Friedmann, Y., Downie, S., Du Toit, R., Emslie, R., Eustace, M., Malan, J., Nghidinwa, K., O'Cruidain, C. & Trendler, K. (eds.) 2011.

Perspectives on dehorning and legalised trade in rhino horn as tools to combat rhino poaching: *Proceedings of a workshop assessing legal trade in rhino horn as a tool in combating poaching as well as a detailed assessment of the efficacy of dehorning as a deterrent to poaching*. Johannesburg: Endangered Wildlife Trust.

Du Toit, R. 2013. Response to rhino poaching in Zimbabwe's lowveld region: Presentation at IUCN-SSC African Rhino Specialist Group Meeting, Naro Moru, Kenya, February 2013. In: Duffy, R., Emslie, R.H. & Knight, M.H. 2013. *Rhino poaching: how do we respond?*, p.16. London: Evidence on Demand, with the Department for International Development (DFID). (Consultancy report for DFID).

Duffy, R. 2000. *Killing for conservation: wildlife policy in Zimbabwe*. Harare: International African Institute.

Duffy, R. 2010. *Nature crime: how we're getting conservation wrong*. London: Yale University Press.

Duffy, R. & St John, F.V. 2013. *Poverty, poaching and trafficking: what are the links?* London: Evidence on Demand, with the Department for International Development (DFID).

Duffy, R., Emslie, R.H. & Knight, M.H. 2013. *Rhino poaching: how do we respond?* London: Evidence on Demand, with the Department for International Development (DFID). (Consultancy report for DFID).

Dugard, J. 2005. *International law: a South African perspective*. Cape Town: Juta.

Ehrlich, P. & Ehrlich, A. 1982. *Extinction: the causes and consequences of the disappearance of species*. London: Gollancz.

Eloff, C. 2012. *Rhino poaching in South Africa – is it a losing battle?* From: http://www.rhinoresourcecenter.com/pdf_files/139 (accessed 15 August 2014).

Elredge, N. 2001. *The sixth extinction*. From: <http://www.actionbioscience.org/evolution/elredge> (accessed 17 August 2014).

Els, H. & Bothma, J. du P. 2010. The sustainable use of renewable natural resources. In: Bothma, J. du P. & Du Toit, J.G. (eds.) *Game ranch management*. 2010. Pretoria: Van Schaik.

Emslie, R. 2005. *The debate about rhino hunting*. From: http://www.savetherhino.org/rhino_info/thorny_issue (accessed 23 August 2014).

Emslie, R. 2012. *Ceratotherium simum*. In: IUCN. 2013. *IUCN red list of threatened species. Version 2013.1*. From: <http://www.iucnredlist.org> (accessed 28 September 2013).

Emslie, R. & Brooks, M. 1999. *African rhino: status survey and conservation action plan*. Gland, Switzerland: IUCN/SSC African Rhino Specialist Group.

Endangered Wildlife Trust. 2013a. *Rhino security booklet: a publication of the Endangered Wildlife Trust's rhino project*. Johannesburg: The Trust.

- Endangered Wildlife Trust. 2013b. *Position statement on legalising the international trade in rhino horn*. From: <http://www.ewt.org.za/RHINO/articles/international> (accessed 31 July 2014).
- Environmental Investigation Agency (EIA). 2013. *Vietnam's illegal rhino horn trade: undermining the effectiveness of CITES*. London: EIA.
- Eustace, M. 2011. Rhino values. *Cleft stick*, 1:n.p. (Newsletter of the Game Rangers Association of South Africa).
- Eustace, M. 2012. *A rhino solution*. From: <https://pmg.org.za/committeemeeting/13886> (accessed 6 December 2015).
- Eustace, M. 2014. *Smart trade in rhino horn is only solution to poaching*. From: <http://www.bidlive.co.za> (accessed 15 March 2015).
- Fenio, K.G. 2014. *Poaching rhino horn in South Africa and Mozambique: community and expert views from the trenches*. Washington, DC: U.S. Department of State.
- Ferreira, S. 2014. To tech or not to tech? *Wildlife ranching South Africa*, Issue 6:108-115.
- Ferreira, S.M., Pfab, M. & Knight, M. 2014. *Management strategies to curb rhino poaching: alternative options using a cost-benefit approach*. From: <http://www.sajs.co.za/sites/default/files/publications> (accessed 6 December 2015).
- Fielding, N. 1994. Varieties of research interviews. *Nurse researcher*, 1(3):4-13.

Fischer, C. 2004. *The complex interaction of markets for endangered species products*. Washington, DC: Resources for the future. (Discussion Paper 02-21).

Flick, U., Von Kardoff, E. & Steinke, I. 2004. *A companion to qualitative research*. Thousand Oaks, CA: Sage.

Fontana, A. & Frey, J. 2000. The interview: from structural questions to negotiated text. In: Denzin, N. & Lincoln, Y. (eds.) *Handbook of qualitative research*. 2000. 2nd edition. London: Sage.

Fuggle, R.F. & Rabie, M.A. 2005. *Environmental management in South Africa*. Cape Town: Juta.

Gibson, C.C. & Marks, S.A. 1995. Transforming rural hunters into conservationists: an assessment of community-based wildlife management programs in Africa. *World development*, 23(6):941-957.

Glazewski, J. 2005. *Environmental law in South Africa*. Durban: LexisNexis Butterworths.

Golafshani, N. 2003. *Understanding reliability and validity in qualitative research*. From: <http://nsuworks.nova.edu/tqr/vol8/iss4/6> (accessed 20 January 2016).

Gorard, S. 2007. Mixing methods is wrong: an everyday approach to educational justice: *Paper presented at the British Educational Research Association Annual Conference in London, on 5-8 September 2007*.

Green, J. & Thorogood, N. 2009. *Qualitative methods for health research*. 3rd edition. Thousand Oaks, CA: Sage.

Hall-Martin, A.J., Du Toit, J.G., Hitchins, P.M. & Knight, M.H. 2008. *An excerpt of the 2008 survey of white rhinoceros, Ceratotherium simum simum, on private land in South Africa*. (Unpublished report for the WWF-African Rhino Programme).

Hanks, J. 2015a. *Operation Lock and the war on rhino poaching*. Cape Town: Penguin.

Hanks, J. 2015b. *Submission to panel of experts into South Africa's comprehensive integrated approach to reduce rhino poaching, Kempton Park, March 2015*. (Article in possession of researcher, as part of presentation material).

Helfrich, K. 2014. *Hot pursuit of poachers happening*. From: <http://www.defenceweb.co.za/index.php?> (accessed 11 January 2015).

Heyink, J.W. & Tymstra, T.S. 1993. The function of qualitative research. *Social indicators research*, 29(3):291-305.

Heyman, F. & Dell, G. 2012. *Corruption by country: global corruption barometer*. From: http://www.transparency.org/country#ZAF_PublicOpi. (accessed 6 January 2016).

Hiemstra, V.G. & Gonin, H.L. 1992. *Trilingual legal dictionary*. 3rd edition. Kenwyn: Juta.

Hofstee, E. 2006. *Constructing a good dissertation: a practical guide to finishing a Master's, MBA or PhD on schedule*. Johannesburg: EPE Publishing.

Honey, M. 1999. *Ecotourism and sustainable development: who owns paradise?* Washington, DC: Island Press.

Hopkinson, L., Van Staden, M. & Ridl, J. 2008. National and international law. In: Scholes, R.J. & Mennell, K.G. (eds.) *Elephant management: a scientific assessment for South Africa*. 2008. Johannesburg: Wits University Press.

Humane Society International. 2011. *Threats to rhinos*. From: [www.hsi.org/issues/rhinoceros_poaching\(facts\)threats to rhinos.html](http://www.hsi.org/issues/rhinoceros_poaching(facts)threats_to_rhinos.html) (accessed 29 June 2013).

Humane Society International. 2014. *Rhino horn isn't medicine*. From: <https://www.hsi.org/news/2014/10/vietnam-rhino-horn-demand-reduced-poll-101614.html> (accessed 31 August 2015).

Hume, J. 2013. *Saving rhino from extinction*. From: <http://www.africanindaba.com> (accessed 21 August 2014).

Hume, J. 2015. High Court challenge: trade moratorium on rhino horn. *Wildlife ranching South Africa*, Issue 4 (Special rhino supplement):37-38.

International Union for Conservation of Nature (IUCN). 2000. *Sustainable use policy document*. From: <http://www.iucn.org> (accessed 18 August 2014).

Isaacs, J.C. 2000. The limited potential of ecotourism to contribute to wildlife conservation. *Wildlife Society bulletin*, 28(4):61-69.

Jacobsen, T. 2012. *Rhino and vicuña: a parallel*. From: <http://www.slideshare.net/AWDF/rhinovicunaparallel> (accessed 10 November 2013).

Johnson, R.B. & Onwuegbuzie, A.J. 2004. Mixed methods research: a research paradigm whose time has come. *Educational researcher*, 33(7):14-26.

Jones, P. 2014. Costs and risks of rhino security. *Wildlife ranching South Africa*, Issue 4 (Special rhino supplement):126-129.

Jones, P. 2015. The cost of the CITES trade ban on African rhino conservation. *Wildlife ranching South Africa*, Issue 4 (Special rhino supplement):14-16.

Kara, H. 2012. *Research and evaluation for busy practitioners: a time-saving guide*. Bristol: Policy Press at the University of Bristol.

Kidd, M. 2008. *Environmental law*. Cape Town: Juta.

Knight, M. 2015. Calling all rhino owners. How can you, the private rhino owner, help to solve the rhino crisis? *Wildlife ranching South Africa*, Issue 4 (Special rhino supplement):9-13.

Kortenkamp, K. & Moore, C.F. 2001. Ecocentrism and anthropocentrism: moral reasoning about ecological commons dilemmas. *Journal of environmental psychology*, 21:261-272.

Küller, A. 2014. *Rhinonomics*. From: <http://www.savetherhino.org/assets/0000/5374/Rhino> (accessed 7 May 2015).

Leedy, P.D. & Ormrod, J.E. 2010. *Practical research: planning and design*. 9th edition. Upper Saddle River, NJ: Pearson Education.

Lemieux, A. & Clarke, R. 2009. The international ban on ivory sales and its effect on elephant poaching in Africa. *British journal of criminology*, 49:451-471.

Lincoln, Y.S. & Guba, E.G. 1985. *Naturalistic inquiry*. Beverly Hills, CA: Sage.

Lindsay, P.A. & Taylor, A. 2011. *A study on the dehorning of African rhinoceroses as a tool to reduce the risk of poaching*. Pretoria: Department of Environmental Affairs/Endangered Wildlife Trust.

Maenetje, D.P. 2015. Limpopo communities to lobby CITES to legalise the rhino-horn trade. *Wildlife ranching South Africa*, Issue 4 (Special rhino supplement):20.

Mander, D. 2012. *Damned if you do & damned if you don't – legalising the rhino horn trade*. Victoria Falls, Zimbabwe: International Anti-Poaching Foundation.

Marshall, C. & Rossman, G.B. 2006. *Designing qualitative research*. Thousand Oaks, CA: Sage.

Martin, C.B. & Martin, E.B. 1991. Profligate spending exploits wildlife in Taiwan. *Oryx*, 25:18-20.

Massé, F.& Lunstrum, E. (n.d.). *Accumulation by securitization: commercial poaching, neoliberal conservation, and the creation of new wildlife frontiers*.

From: [http://www.sciencedirect.com/science/article/pii/500](http://www.sciencedirect.com/science/article/pii/S0950268815000500) (accessed 7 December 2015).

McCallon, E. & McCray, E. 1975. *Designing and using questionnaires*. Austin, TX: Learning concepts. (School accountability series: Monograph, 5).

Michler, I. 2012. *The Mozambique connection to rhino poaching*. From: <http://showme.co.za/lifestyle/the-mozambique-comm> (accessed 19 March 2013).

Miles, M.B. & Huberman, A.M. 1994. *Qualitative data analysis*. 2nd edition. Thousand Oaks, CA: Sage.

Milledge, A.H. 2007. Illegal killing of African rhinos and horn trade, 2000-2005: the era of resurgent markets and emerging organized crime. *Pachyderm*, 43:98, July-December.

Milliken, T. 2014. *Illegal trade in ivory and rhino horn: an assessment report to improve law enforcement under the Wildlife TRAPS Project*. Cambridge, UK: TRAFFIC International.

Milliken, T. & Shaw, J. 2012. *The South Africa-Vietnam rhino horn trade nexus: a deadly combination of institutional lapses, corrupt wildlife industry professionals and Asian crime syndicates*. Cambridge, UK: TRAFFIC International.

Milner-Gulland, E.J., Beddington, J.R. & Leader-Williams, R. 1992. *Dehorning African rhinos: a model of optimal frequency and profitability: Proceedings of the Royal Society of London* B249:83-87. From:

<http://www.jstor.org/discover/10.2307/49790?uid=2&> (accessed 24 October 2014).

Milton, S.J. 2000. Community-based conservation: exploring positive feedback between economic development and conservation. *South African journal of science*, 96:164-165, March.

Morse, J.M., Barrett, M., Mayan, M., Olson, K. & Spiers, J. 2002. Verification strategies for establishing reliability and validity in qualitative research. From: <https://ejournals.library.ualberta.ca/index.php/ijQM/article/viewArticle/4603> (accessed 21 January 2016).

Moulton, M.P. & Sanderson, J. 1999. *Wildlife issues in a changing world*. Boca Raton, FL: CRC Press.

Mouton, J. 1996. *Understanding social research*. Pretoria: Van Schaik.

Mouton, J. 2001. *How to succeed in your master's and doctoral studies: a South African guide and resource book*. Pretoria: Van Schaik.

Msimang, M. 2015. A Pro-trade agenda. *Wildlife ranching South Africa*, Issue 4 (Special rhino supplement):6-8.

Nadal, A. & Aguayo, F. 2014. *Leonardo's sailors: a review of the economic analysis of wildlife trade*. Manchester: University of Manchester. (LCSV Working Paper Series No. 6).

Network for Animals. 2015. Simply too risky! Why the South African government should not move to legalise the trade in rhino horn: *Submission to panel of experts into South Africa's comprehensive integrated approach to*

reduce rhino poaching, Kempton Park, March 2015. [Meeting notes in possession of researcher].

Nieuwenhuis, J. 2012. Qualitative research designs and data gathering techniques. In: Maree, K. (eds.) *First steps in research*. 2012. Pretoria: Van Schaik.

Patton, M.Q. 1999. Enhancing the quality and credibility of qualitative analysis. *HSR: Health services research*, 34(5), Part II:1189-1208.

Patton, M.Q. 2002. *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.

Pienaar, D.J., Hall-Martin, A.J. & Hitchins, P.M. 1991. Horn growth rates of free-ranging white and black rhinoceros. *Koedoe*, 34:97-105.

PROA/RMG rhino owners survey. 2015. Private Rhino Owners Association newsletter, November:n.p.

Rabie, M.A. 1996. Environmental conservation. In: *The law of South Africa*, Volume 9 (first re-issue). 1996. Durban: Butterworths.

Rabie. M.A. & Strauss. S.A. 1985. *Punishment: an introduction to principles*. Cape Town: Lex Patria.

Reilly, T. 2015a. *Rhinos in crisis: what is there to misunderstand about the current plight of rhino?* [Document emailed by author to researcher on 20 August 2015].

Reilly, T. 2015b. The Swazi conservation reality. *Wildlife ranching South Africa*, Issue 4 (Special rhino supplement):25-28.

Rhino DNA Index System. 2014. From: <http://www.rhodis.co.za> (accessed 3 October 2014).

Rhino Rescue Project. 2014. From: <http://www.rhinorecueprojectcom/about-the-project> (accessed 5 October 2014).

Rice, M. 2015. *The case against a legal ivory trade: it will lead to more killing of elephant*. From: http://e360.yale.edu/feature/counterpoint_the_case_against_a_legal_ivory_trade (accessed 10 April 2015).

Robson, C. 2002. *Real world research: a resource for social scientists and practitioner-researchers*. Oxford: Wiley-Blackwell.

Roe, D. 2008. *Trading nature: a report with case studies, on the contribution of wildlife trade management to sustainable livelihoods and the millennium development goals*. Cambridge, UK: TRAFFIC International.

Rowcliffe, M.J., De Merode, E. & Cowlshaw, G. 2004. *Do wildlife laws work? Species protection and the application of a prey choice model to poaching decisions*. London: Zoological Society of London, Institute of Zoology.

Ryan, G.W. & Bernard, H.R. 2003. *Techniques to identify themes*. From: <http://www.analytictech.com/mb870/Readings/ryan> (accessed 15 October 2015).

Sandelowski, M. 2002. Re-embodying qualitative inquiry. *Qualitative health research*, 12:104-115.

SANParks see South African National Parks

Saunders, M., Lewis, P. & Thornhill, A. 2009. *Research methods for business students*. London: Pearson Education.

Save the Rhino International. 2012. *Poaching crisis in South Africa*. From: https://www.savetherhino.org/rhino_info/thorny_issue (accessed 31 October 2015).

Schurink, W.J. 2003. Qualitative research in management and organisational studies with reference to recent South African research. *SA journal of human resource management*, 1(3):2-14.

Snyman, C.R. 2002. *Criminal law*. Durban: Butterworths.

South Africa. 1956. Riotous Assemblies Act 17 of 1956. Pretoria: Government Printer.

South Africa. 1959. Trespass Act 6 of 1959. Pretoria: Government Printer.

South Africa. 1962. Animal Protection Act 71 of 1962. Pretoria: Government Printer.

South Africa. 1968. Dangerous Weapons Act 71 of 1968. Pretoria: Government Printer.

South Africa. 1969. Orange Free State Nature Conservation Ordinance 8 of 1969. Pretoria: Government Printer.

South Africa. 1974a. Natal Nature Conservation Ordinance 15 of 1974. Pretoria: Government Printer.

South Africa. 1974b. Cape Nature and Environmental Conservation Ordinance 19 of 1974. Pretoria: Government Printer.

South Africa. 1977. Criminal Procedure Act 51 of 1977. Pretoria: Government Printer.

South Africa. 1983. Transvaal Nature Conservation Ordinance 12 of 1983. Pretoria: Government Printer.

South Africa. 1991. Game Theft Act 105 of 1991. Pretoria: Government Printer.

South Africa. 1996a. Constitution of the Republic of South Africa Act 108 of 1996. Pretoria: Government Printer.

South Africa. 1996b. Proceeds of Crime Act 76 of 1996. Pretoria: Government Printer.

South Africa. 1998a. National Environmental Act 107 of 1998. Pretoria: Government Printer.

South Africa. 1998b. Mpumalanga Nature Conservation Act 10 of 1998. Pretoria: Government Printer.

South Africa. 1998c. Prevention of Organised Crime Act 121 of 1998. South Africa: Government Printer.

South Africa. 1999. National Environmental Management Act 107 of 1998. Commencement date. (Proclamation 8 of 29 January 1999). Pretoria: Government Printer.

South Africa. 2000. Firearms Control Act 60 of 2000. Pretoria: Government Printer.

South Africa. 2003. Limpopo Environmental Management Act 7 of 2003. Pretoria: Government Printer.

South Africa. 2004a. National Environmental Management: Biodiversity Act 10 of 2004. Pretoria: Government Printer.

South Africa. 2004b. National Environment Management: Biodiversity Act. Commencement date. (Government Notice 47 of 2004). *Government Gazette*, 26887, 8 October 2004.

South Africa. 2009a. Marking of rhinoceros horn and hunting of white rhinoceros for trophy hunting purposes. (Government Notice 756 of 2009). *Government Gazette*, 32426, 20 July 2009.

South Africa. 2009b. National moratorium on the trade of individual rhinoceros horns and any derivat[iv]es or products of horns within South Africa. (Government Notice 148 of 2009). *Government Gazette*, 31899, 13 February 2009.

South Africa. 2010. CITES regulations. (Government Notice 173 of 2010). *Government Gazette*, 33002, 5 March 2010.

South Africa. 2012. Norms and standards for the marking of rhinoceros and rhinoceros horn, and for the hunting of rhinoceros for trophy hunting purposes. (Government Notice 304 of 2012). *Government Gazette*, 35248, 10 April 2012.

South Africa. 2013a. List of species that are threatened or protected, activities that are prohibited and exemption from restriction. (Government Notice 388 of 2013). *Government Gazette*, 36375, 16 April 2013.

South Africa. 2013b. Biodiversity management plan for the black rhinoceros in South Africa. (Government Notice 49 of 2013). *Government Gazette*, 36096, 25 January 2013.

South Africa. 2013c. National Environment Management: Biodiversity Act (10/2004): Non-detriment findings. (Government Notice 54 of 2013). *Government Gazette*, 36117, 1 February 2013.

South Africa. 2013d. National Environmental Management Laws Amendment Act 14 of 2013 (NEMLA). Pretoria: Government Printer.

South Africa. Department of Environmental Affairs. 2011. *National Strategy for the Safety and Security of Rhinoceros Populations in South Africa*. From: <https://www.environment.gov.za/documents/strat> (accessed 25 January 2015).

South Africa. Department of Environmental Affairs. 2013. *Rhino issue management report*. Pretoria: Government Printer.

South Africa. Department of Environmental Affairs. 2014. *Minister of Environmental Affairs, Mrs Edna Molewa, remarks on rhino poaching debate* .

[Media release]. From:

https://www.environment.gov.za/speech/molewa_rhinopoachingdebate

(accessed 6 January 2016).

South Africa. Department of Environmental Affairs. 2015a. *Minister of Environmental Affairs, Mrs Edna Molewa, highlights progress in the war against poaching and plans for 2015, 2 September 2014*. [Media release].

From: <https://www.environment.gov.za/mediarelease/mc> (accessed 25 January 2015).

South Africa. Department of Environmental Affairs. 2015b. *Media statement on announcement of the committee of inquiry to deliberate on matters relating to a possible trade in rhino horn, 10 February 2015*. From: <https://www.environment.gov.za/mediarelease/mc> (accessed 15 February 2015).

South Africa. Department of Tourism. 2014. *Statistics*. From: <http://www.southafrica.info/travel/tourists> (accessed 25 April 2015).

South African National Parks (SANParks). 2012. *Mozambique and South Africa hold urgent meeting on rhino poaching, 7 February 2012*. [Media release in possession of researcher].

South African National Parks. 2014a. *SA & Mozambique sign MOU in the field of Biodiversity, Conservation & Management, 22 April 2014*. [Media release in possession of researcher].

South African National Parks. 2014b. *Environmental Affairs Minister leads implementation of integrated management of rhinos in SA, 12 August 2014*. [Media release in possession of researcher].

Strydom, H.A. & King, N.D. 2014. *Environmental management in South Africa*. Cape Town: Juta.

Svedin, U. 1998. Implicit and explicit ethical norms in the environmental policy arena. *Ecological economics*, 24:299-309.

Symonds, J.E. & Gorard, S. 2010. Death of mixed methods? Or the rebirth of research as a craft. *Evaluation and research in education*, 236(2):121-136, June.

† Sas-Rolfes, M.J. 1990. *Privatizing the rhino industry (FMF paper)*. From: <http://www.rhino-economics.com/wp-content> (accessed 27 October 2014).

† Sas-Rolfes, M.J. 1993. *The economics of rhino conservation: an economic analysis of policy options for the management of wild rhino populations in Africa*. Master's dissertation, University College of London.

† Sas-Rolfes, M.J. 1997a. *Does CITES work? Four case studies*. London: Institute of Economic Affairs, Environment Unit. (IEA Environment Briefing No. 4).

† Sas-Rolfes, M.J. 1997b. Elephants, rhinos and the economics of illegal trade. *Pachyderm*, 24:23-29, July-December.

† Sas-Rolfes, M.J. 2011a. CITES and the trade in rhino horn. *Wildlife ranching South Africa*, January, 18-19.

† Sas-Rolfes, M.J. 2011b. *Saving African rhinos: a market success story (case study)*. Bozeman, MT: Property and Environment Research Center.

† Sas-Rolfes, M.J. 2012. *The rhino poaching crisis: a market analysis*. From: <http://savetherhinotrust.org/programmes/84-the-rhin> (accessed 15 August 2014).

† Sas-Rolfes, M.J. 2015. Safe in the safe? *Wildlife ranching South Africa*, Issue 1:22-29.

Taylor, A. 2015. The feasibility of legalising international trade in rhino horn: *Presentation at the proceedings of the Committee of Inquiry into Rhino Poaching, Kempton Park, March 2015*. [Meeting notes in possession of researcher].

Taylor, A., Brebner, K., Coetzee, R., Davies-Mostert, H., Lindsey, P., Shaw, J. & 't Sas-Rolfes, M. 2014. *The viability of legalising trade in rhino horn in South Africa*. Pretoria: Department of Environmental Affairs.

Terblanche, S.S. 1999. *A guide to sentencing in South Africa*. Durban: Butterworths.

Thakuli, R. 2014. Howard Buffett donates R255 million towards rhino conservation. *Go wild*, March/April 2014:9.

Thomson, A.L. 2012. *The survival of black and white rhinoceros in South Africa*. From: <https://www.environment.gov.za/sites/default/files> (accessed 10 January 2016).

Thomson, A.L. 2015. Submission to panel of experts into South Africa's comprehensive integrated approach to reduce rhino poaching: *Presentation [on behalf of OSCAP] at the proceedings of the Committee of Inquiry into Rhino Poaching, Kempton Park, March 2015*. [Document in possession of researcher, as part of presentation material].

Thomson, R. 1986. *On wildlife conservation*. Cape Town: United Publishers International.

Thomson, R. 1992. *The wildlife game*. Westville: Nyala Wildlife Trust.

Thomson, R. 2006. *Managing our wildlife heritage*. Hartbeespoort: Magron Publishers.

Thomson, R. 2012. *Rhino poaching in South Africa: Presentation at the SAHGCA congress in 2012*. From: <http://www.maricobosveld.com/rhino-poaching-in-south-africa-by-ron-thompson> (accessed 2 September 2015).

Thomson, R. 2013. *The sustainability of the wildlife industry unpacked in a global context*. From: <http://huntnetwork.net/modules/wfsection/article.php?articleid=901> (accessed 2 September 2015).

Thomson, R. 2015. Reconsidering CITES. *Wildlife Ranching South Africa*, Issue 1:32-39.

Thornton, N. 1991. *Alcohol prohibition was a failure*. Washington, DC: Cato Institute. (Cato policy study no. 157).

Tisdell, C. 2002. *The economics of conserving wildlife and natural areas*. Northampton, MA: Edward Elgar Publishing.

Van der Merwe, C.G. & Blackbeard, M. 2003. Animals. In: *Law of South Africa, Volume 1*. 2003. 2nd edition, p. 346. Durban: Butterworths.

Van Hoven, W. 2015. Rhino case presentation: Presentation to the Department of Environmental Affairs, Commission of Inquiry on Rhino Horn Trade, at the proceedings of the Committee of Inquiry into Rhino Poaching, Kempton Park, March 2015. [Meeting notes in possession of researcher].

Verdoorn, G. 2008. Conservation versus preservation – often misunderstood. *SA hunter*, 06017:8, June.

Vermeulen, L.M. 1998. *Research orientation: a practical study guide for students and researchers*. Vanderbijlpark: Vaal University of Technology.

Vigna, L. & Martin, E.M. 1993. Yemen's rhino horn trade increases. *Oryx*, 27:91-96.

Walker, C. & Walker, A. 2012. *The rhino keepers: struggle for survival*. Johannesburg: Jacana.

Weber, D.S., Mandler, T., Dyck, M., Van Coeverden De Groot, P.J., Lee, D.S. & Clark, A. 2015. Unexpected and undesired conservation outcomes of wildlife trade bans – an emerging problem for stakeholders? *Global ecology and conservation* 3:389-400, January.

WESSA see Wildlife and Environmental Society of Southern Africa

WildAid. 2015. *Submission to panel of experts into South Africa's comprehensive integrated approach to reduce rhino poaching, Kempton Park, March 2015*. [Article in possession of researcher].

Wilderness Foundation South Africa. 2012. *Combating rhino poaching – the way forward: submission to the portfolio committee, 26 January 2012*. From: <http://wildernessfoundation.co.za/index.php?option> (accessed 25 October 2016).

Wildlife and Environmental Society of Southern Africa (WESSA). 2013. *WESSA position statement: rhino poaching, June 2013*. Howick: WESSA.

Wildlife and Environmental Society of Southern Africa (WESSA). 2015. *South Africa's rhino*. From: wessa.org.za/news/32/65/South-Africa-s-rhino (accessed 25 October 2015). [Press release, 27 March 2015].

Wildlife ACT. 2015. *Court lifts ban on rhino horn trade: what now?* From: <http://wildlifeact.com/blog/court-lifts-ban-on-rhino-horn-trade-what-now> (accessed 6 December 2015).

Wiltshire, J. 2015a. An assessment of anti-trade arguments. *Wildlife ranching South Africa*, Issue 4 (Special rhino supplement):39-40.

Wiltshire, J. 2015b. Will rhino horn trading reduce poaching enough? An assessment of the feasibility of rhino horn trading: *Presentation at the proceedings of the Committee of Inquiry into Rhino Poaching, Kempton Park, March 2015*. [Meeting notes in possession of author].

World Wide Fund for Nature (WWF). 2013. *Pioneering research reveals new insights into the consumers behind rhino poaching*. From: <http://www.wwf.org.za/?8760/rhino-horn-consumer> (accessed 7 May 2015).

World Wide Fund for Nature (WWF). 2015. *Asian rhinos*. From: http://wwf.panda.org/what_we_do/endangered.species/rhinoceros/asian_rhinos (accessed 19 January 2016).

WWF/DALBERG. 2012. *Fighting illicit wildlife trafficking: a consultation with governments*. Gland, Switzerland: WWF International.

Wyatt, T. & Cao, A.N. 2015. *Corruption and wildlife trafficking*. Bergen, Norway: Chr. Michelsen Institute. (U4 Issue May 2015 No. 11).

Zhang, Y. & Wildemuth, B.M. 2005. *Qualitative analysis of content*. From: <http://philpapers.org/rec/ZHAQAO> (accessed 15 October 2015).

Zhou, J., Xie, G. & Yan, X. 2011. *Encyclopedia of traditional Chinese medicines: molecular structures, pharmacological activities, natural sources and applications*. Berlin/Heidelberg: Springer-Verlag.

GOVERNMENT REPORTS

Acquisition and loss of ownership of game. South African Law Commission.
Working Paper 27, Project 69 April 1989.

LAW REPORTS

Kruger and Hume v Minister of Water and Environmental Affairs and two others 2015 (Case number 57221/12). High Court of South Africa, Gauteng Division, Pretoria. (Unreported).

R v Swanepoel 1945 AD 444

S v Khumalo and others 1984 3 SA 327 (A)

S v Mhlakaza 1997n1 SACR 515 (SCA)

S v Ndlovu 1983 2 PH H172 (A)

S v Ngcongco 1996 1 ALL SA 403 (N)

S v Nkambule 1993 1 SACR 136 (A)

S v Small 1983 2 PH H34 (O)

S v Zinn 1969 2 SA 537 (A)

APPENDIX "A"

QUESTIONS

1. In your opinion, what is the reason for the increase in poaching?
 - 1.1 Most important reason:
 - 1.2 Second:
 - 1.3 Third:
2. The current global approach to fighting illicit wildlife trafficking is failing. Do you agree? If yes – what do you think is the reason for this failure?
3. Can legal trade in rhino horn limit poaching of rhinos? Short motivation:
4. Can dehorning limit the poaching of rhinos? Short motivation:
5. Can poisoning limit the poaching of rhinos? Short motivation:
6. Can increased law enforcement limit the poaching of rhinos? Short motivation:
7. What type of security do you have and what is the annual cost in this regard? Did you experience any increase in security cost over the last 3 years?
8. How has financial COST of keeping rhino changed since 2008?

Significantly Decreased	Moderately Decreased	Small change	Moderately Increased	Significantly Increased
More than 10%	Between - 10% and - 5%	Between 0% and 5%	Between 5% and 10%	Greater than 10%

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9. How would you describe the NET PROFIT made from having rhino on your property for the last financial year?

Costs greatly exceed benefits	Costs slightly exceed benefits	Costs similar to benefits	Benefits slightly exceed costs	Benefits greatly exceed costs

10. Can translocation limit the poaching of rhinos? Short motivation:
11. Is our legal system effective enough to deal with poaching? What do you suggest in this regard?

- 12 (a) Does the punishment fit the crime?

YES

NO

- 12 (b) Do you think that stricter sentences would deter “would-be” poachers?

YES

NO

13. If trade were legalised either nationally or internationally, would you buy or sell rhino horn?

14. If trade were legalised, would you consider dehorning your rhinos on a regular basis to sell horn?

YES

NO

If the answer is No, give reasons:

15. In order to legalise trade, South Africa needs a trading partner. Do you think that this is possible and what do you suggest in this regard?

16. If a centralised database would be a prerequisite of legal trade, would you be prepared/willing to provide the following details:

16.1 number of animals

YES

NO

16.2 records of reproduction

YES

NO

16.3 mortality

YES

NO

16.4 sales

YES

NO

16.5 purchases

YES

NO

16.6 hunting

YES

NO

16.7 poaching

YES

NO

17. Will South Africa be in a position to effectively regulate a system of legal trade nationally and internationally? (Give reasons)

18. Do you have any suggestions regarding a Centralised database?

19. Who should be responsible for keeping such a database?

20. Will it be possible to keep illegal rhino horn out of the legal market? Any suggestions in this regard?

21. Will legal trade of rhino horn have other negative impacts on the conservation and well-being of the species? (Give reasons)
22. Do you support the lifting of the moratorium on domestic trade?
Motivate:
23. If yes, do you think that domestic trade will still be viable if the international trade ban is not lifted?
24. Do you think that South Africa will be in a position to meet the demand in rhino horn on a continuous basis, bearing in mind that there might be an increase in demand? Motivate:
25. Do you have any suggestions on how to stop rhino poaching?

APPENDIX "B"

Dear sir/madam

Research Project: W de Beer: PhD Environmental Management

Our recent telephone conversation refers.

I am currently registered for a PhD in Environmental Management at the University of South Africa. The topic of my research project is: "The Viability of legalising international trade in rhino horn and the possible effect on rhino poaching in South Africa."

Rhino poaching has become a huge concern globally, particularly in the conservation fraternity. Rhinos are threatened with extinction because they are being poached for their horn. The common view is that rhino poaching is morally wrong, and associated with greed and evil intentions.

Everybody is in agreement that rhino poaching must be stopped. However, there are two schools of thought regarding two main approaches (usually in association with certain other techniques) to be used in order to prevent rhino poaching.

The first school of thought refers to those who believe that the rhino horn trade is wrong, and therefore has to be stopped. This can only be achieved by eliminating demand, mainly through the restrictions on trade. This attitude towards the problem, which is the same as that which motivated the ivory ban in 1989, is referred to as the "conventional approach".

The second school of thought follows an alternative approach and sees the overexploitation of biological resources as the result of underinvestment, and argues that any solutions to the rhino poaching problem must address the underlying economic forces driving the process. This point of view is also referred to as sustainable use. The promoters of this school are in favour of legal trade in rhino horn. In South Africa, the cabinet has approved the development and submission of a proposal by the Department of

Environmental Affairs to the seventeenth Conference of the Parties of CITES in 2016 to lift the ban on international rhino horn trade and introduce it in a regulated format.

Supporters of the two schools have raised various arguments in favour and against the schools of thought.

The focus of this study will be to investigate the aforementioned approaches, more specifically the viability of the alternative approach.

The possibility of legalising national (domestic) trade in rhino horn (within South Africa) has already been investigated by the South African Department of Environmental Affairs, hence the purpose of this study will be to investigate the viability of legalising the international trade in rhino horn and to comment and to add some value to the arguments already raised by experts and other role-players in this regard.

As part of the research, I intend to conduct interviews with various role-players involved in the conservation of rhinos, for instance SANParks, Ezemvelo KZN Wildlife, DEA, WWF, EWT, WRSA, PROA, GRU, GRAA as well as a number of private rhino owners.

My research proposal has already been approved by the University.

I realise that it would be inconvenient for you to be interviewed, hence it would be appreciated if you could attend to the questionnaire attached hereto.

The Supervisor for my research project is: Professor W.A.J Nel

Chair of the Department of
Environmental Science Unisa

Tel: (011) 471 2324

Email: nelwaj@unisa.ac.za

Co-Supervisor is: Professor R.M Hendrick

Director: School of
Environmental Science

College of Agriculture and
Environmental Science
Unisa

Tel: (011) 471 2346

Email: rhendric@unisa.ac.za

I will really appreciate your cooperation in this regard.

Regards

APPENDIX "C"

CONSENT FORM

Title of Research Project:

THE VIABILITY OF LEGALISING INTERNATIONAL TRADE IN RHINO HORN AND
THE POSSIBLE EFFECT ON RHINO POACHING IN SOUTH AFRICA

Dear Mr/Mrs/Miss/Ms/Dr. _____ Date:

NATURE AND PURPOSE OF THE STUDY

The purpose of this research project is to investigate the viability of legalising the international trade in rhino horn. A literature review has already been done and the focus is now on the opinions of stakeholders in rhino conservation.

Research process:

1. The study requires all stakeholders to participate in individual interviews.
2. There is no right and wrong answers and all opinions will be valued.
3. You do not need to prepare for the interviews in advance.

Your attention is drawn to the fact that the interviews will be tape recorded to ensure valuable information elicited during the interview is captured and the content of the information can be reviewed in detail. Following the interview, the recorded material will be transcribed. You may peruse the transcription of the recording of the interview in which you participated at any time.

Your opinion is viewed as strictly confidential. No data published in the thesis and journals will contain any information through which you may be identified, unless you agree expressly to the contrary.

The potential benefit of this study is that a contribution can be made in order to find a strategy (probably a combination of strategies) which could benefit anti-poaching of rhinos in South Africa.

WITHDRAWAL CLAUSE

I understand that I may withdraw from the focus of the group at any time. I therefore participate voluntarily until such time as I request otherwise.

CONSENT

I, the undersigned, (full name) have read the above information relating to the project and have also heard the verbal version, and declare that I understand it. I have been afforded the opportunity to discuss relevant aspects of the project with the project leader, and hereby declare that I agree voluntarily to participate in the project.

I indemnify the university and any employee or student of the university against any liability that I may incur during the course of the project.

I further undertake to make no claim against the university in respect of damages to my person or reputation that may be incurred as a result of the project/trial or through the fault of other participants, unless resulting from negligence on the part of the university, its employees or students.

I have received a signed copy of this consent form.

Signature of participant: Signed at
on

WITNESSES

- 1
- 2