

# **An evaluation of different extensive wildlife production systems in the Western Cape Province of South Africa**

by  
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## **DECLARATION**

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: 2 March 2011

## **ABSTRACT**

The wildlife industry in the Western Cape Province is growing, but lacks, particularly, economic research. This study explores the manner in which wildlife production systems in the Western Cape are currently operated and describes the characteristics of this industry. Furthermore, results on the evaluation of identified typical wildlife production systems in different regions of the Western Cape are revealed together with critical factors influencing success.

No confusion remains regarding the importance of this industry. Wildlife production units cover a noteworthy percentage of the total area and are evenly spread within the province. The industry grew rapidly in the past 10 years and with a high diversity of at least 37 different wildlife species; ecotourism, hunting and live sales are the most prominent ways of utilising wildlife. This industry also contributes in terms of job opportunities supplied.

The two typical systems evaluated are the biltong hunting system in the Beaufort West region and the trophy hunting system in the Southern Cape region. The biltong hunting system has been shown to be profitable, though it realises skimpy profits. It is, however, successful by virtue of the fact that wildlife producers perceive the wildlife enterprise as additional income to livestock production, almost without any additional costs. Although the gross margin per large stock unit is high, the trophy hunting system is not profitable and runs at a loss. The main problem is the overhead costs that exceed the gross margin, due to too low a number of wildlife species marketed. The industry in this region is, according to wildlife producers, hampered by legislation and regulations, which limit the variety of species allowed in the region. These wildlife producers manage their system on a part-time basis and fund it from other income sources.

The Department of Agriculture is urged to assist the wildlife industry in the form of research on the economic, ecological and social impacts of this industry to determine its full contribution and capacity. Although wildlife producers contribute towards conservation and the application of sound conservation principles is important to them, they need to generate an income from wildlife production in order to make a living out of it, which ultimately makes it worth their while. Despite the systemic problems of a number of wildlife production systems, some wildlife producers are of the opinion that the pressure experienced in terms of legislation, makes it harder for them (in some regions more than other) to manage their wildlife production units in a profitable manner. Although the main objectives of government conservation authorities and wildlife producers might differ, the contribution of both towards conservation serves as common ground. It is therefore suggested that a joint approach is followed between government conservation authorities, the Department of Agriculture and wildlife producers to further develop the wildlife industry.

## OPSOMMING

Die wilddedryf in die Wes-Kaap groei tans, maar het 'n tekort aan, veral, ekonomiese navorsing. Hierdie studie ondersoek die manier waarop wildproduksiestelsels tans in die Wes-Kaap Provinsie bedryf word en beskryf die karaktereenskappe van hierdie bedryf. Verder word die resultate van die evaluasie van die geïdentifiseerde tipiese wildproduksiestelsels in verskillende areas van die Wes-Kaap Provinsie bekend gemaak, tesame met die kritiese faktore wat sukses beïnvloed.

Daar is geen twyfel oor die belangrikheid van hierdie bedryf nie. Wildplase beslaan 'n betekenisvolle persentasie van die totale oppervlakte en is eweredig versprei in die provinsie. Die bedryf het vinnig gegroei in die laaste tien jaar en met 'n groot verskeidenheid van minstens 37 verskillende wildspesies, is eko-toerisme, jag en lewende verkope die mees algemene manier om wild aan te wend. Die bedryf dra ook baie by in terme van werksgeleenthede.

Die twee tipiese wildproduksiestelsels wat geëvalueer is, is die tipiese biltongjagstelsel in die Beaufort-Wes omgewing en die tipiese trofeejagstelsel in die Suid-Kaap omgewing. Die biltongjagstelsel toon winsgewend te wees, al is dit karige winste wat realiseer. Dit is egter suksesvol in die sin dat wildboere die wildvertakking sien as 'n addisionele inkomste tot die lewende-hawe produksie, amper sonder enige addisionele kostes. Alhoewel die bruto marge per grootvee-eenheid goed lyk, is die trofeejagstelsel nie winsgewend nie en maak 'n verlies. Die eintlike probleem is die oorhoofse koste wat meer is as die bruto marge, as gevolg van te min en te klein verskeidenheid wild wat bemark word. Die bedryf in hierdie omgewing, na die mening van wildboere, word terug gehou deur wetgewing en maatreëls, wat die verskeidenheid wildspesies wat toegelaat word in die omgewing beperk. Hierdie wildboere bestuur hul stelsels op 'n deeltydse basis en befonds dit vanuit ander inkomste bronne.

Die Departement van Landbou word aangeraai om die wilddedryf by te staan in die vorm van navorsing op die ekonomiese, ekologiese en sosiale vlakke van die wilddedryf om sodoende die volle bydrae en omvang van hierdie bedryf te bepaal. Alhoewel wildboere bydra tot bewaring en die toepassing van suiwer bewaringsbeginsels vir hulle belangrik is, het hulle nodig om 'n inkomste te genereer uit wildproduksie om sodoende 'n bestaan daaruit te kan maak. Buiten die sistemiese probleme wat ondervind word by sommige wildproduksiestelsels, is party wildboere van mening dat die druk wat ervaar word in terme van wetgewing en maatreëls, dit vir hulle moeiliker maak om hul wildplase op 'n winsgewende manier te bestuur. Alhoewel die doelwitte van die natuurbewaringsgesag en wildboere van mekaar mag verskil, dien die bydrae tot bewaring deur albei partye as gemeenskaplike grond. Om daardie rede word dit aanbeveel dat 'n gesamentlike benadering tussen die regering se natuurbewaringsgesag, die Departement van Landbou en die wildboere gevolg word, om die wilddedryf verder te ontwikkel.

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 BACKGROUND**

The Western Cape wildlife industry has started to grow in the past decade and wildlife producers' need for information, and therefore also research, became inevitable. The Western Cape Department of Agriculture decided to conduct a baseline study through which research priorities and gaps would be identified.

Research concerning the wildlife industry in the Western Cape Province is necessary since little has been done in the past. For such scientific research to be done, a sound foundation of data and information with regards to wildlife producers and wildlife production units is essential. The results of this study will therefore be useful for any future scientific research on the wildlife industry of the Western Cape Province.

Since virtually no information on the wildlife industry in this province existed up until this point, the first order of business was a baseline study to describe the characteristics of the wildlife industry. Using this data, typical wildlife production units can be identified and then evaluated after which it is possible to make recommendations regarding research priorities and gaps.

Literature on the wildlife industry seldom mentions or has data specific to the Western Cape Province. The reason for this could be either that the Western Cape wildlife industry is a small, insignificant industry, or it could mainly be due to the lack of information about wildlife activities in this province. The association of wildlife production with summer rainfall areas perhaps also contributes to that. Compared to other provinces, the wildlife industry in the Western Cape Province is still in its initial development phase, and lacks particularly economic research (Bothma, 2004). Besides research on species abundance and distribution, almost no scientific research concerning the wildlife industry in the Western Cape Province has yet been done. However, this does not necessarily mean that it is small or insignificant. Therefore, a research approach is required to fully develop the potential of the industry, given the physical, legal, marketing and economic constraints of the province.

This study provides agricultural economic support for the development of optimal agricultural production systems, supporting regional development initiatives in the province. Managerial information provided by this study, as well as research emerging from it, should be used by the

private sector to facilitate sustainable growth in the wildlife industry, consequently contributing to the economic growth of the province.

The results of this study might enable new entrants to the market to make well-informed decisions regarding the type of production system in which to invest and it can enable established wildlife producers to evaluate their own management and improve on it. It is also a valuable opportunity to motivate wildlife producers to participate in research, and prepare them to have an open mind and positive attitude towards future research projects.

The importance of the South African wildlife industry is doubted by many. The utilisation of land by means of wildlife production is seen as a loss of good agricultural land by some. Also, the perception exists that labour is shed when farmers switch from domesticated livestock production to wildlife production. This study might contribute toward a basis for well-informed government decisions.

## **1.2 CLARIFICATION OF TERMS**

In the literature and in practice, various terms are used in the wildlife context and it sometimes causes confusion. During debates between government conservation authorities and wildlife producers, certain terms are used interchangeably or incorrectly and this results in problems (Bothma, 2005). It is therefore important to clarify the meaning of some terms to ensure uniform understanding and application thereof (DEAT, 2005) from the start. The terms as explained below are not necessarily a formal definition, but rather an explanation of its meaning when used in this study.

“Game” refers to wild animals that are being hunted (Bothma, 2005) mainly for either their meat or their trophies.

“Game meat” is meat obtained from certain wild, free-running game animals in South Africa and it is normally referred to as venison. It does however, differ from venison. In other countries like Australia, New Zealand, Europe and America, venison originates primarily from domesticated animals (Hoffman *et al.*, 2005).

“Wildlife” is a collective term meaning wild animals, including game as well as wild animals that are not hunted. It represents a much greater diversity of animals (Bothma, 2005).

“Wildlife production” in this study refers specifically to extensive wildlife production except where stated otherwise. Wildlife production therefore is the management of wildlife in a wildlife-proof

fenced system, with minimal human intervention in the form of the provision of water, the supplementation of food (except during droughts), the control of parasites and the provision of health care (Dry, 2009; NAMC, 2006).

A “wildlife production unit” in this study could be defined as a piece of fenced, privately owned land, which is fully or partially stocked with wildlife. Such wildlife is directly or indirectly utilised for commercial purposes or for own usage. Livestock and other agricultural practices may also occur on such a wildlife production unit.

In this study the term “wildlife producers”, specifically refers to extensive wildlife producers, also known as wildlife ranchers (Bothma, 2005), except where stated otherwise. This term therefore refers to both owners and managers of an extensive wildlife production unit.

“Wildlife industry” refers to the private wildlife industry, managed by private wildlife producers and does not include activities managed by government conservation authorities.

In this thesis, “Western Cape” and “Western Cape Province” are used interchangeably. The area of investigation includes the whole of the Western Cape Province of South Africa, but it also includes two wildlife production units that are located just outside the boundaries of the province. These units, which share the same adjacent habitat and vegetation as the Western Cape Province, were only involved in the initial survey that described the characteristics of the Western Cape wildlife industry. The typical wildlife production systems were identified in regions only within the Western Cape Province.

### **1.3 PROBLEM STATEMENT**

**A study to evaluate the economic viability of different wildlife production systems in the Western Cape Province is essential.**

This problem will be addressed by breaking it down to five sub-problems.

#### **1.3.1 Sub-problem 1**

**Describe the characteristics of wildlife production systems.**

In order to explore the manner in which wildlife production systems are currently operated in the Western Cape, a sound foundation of data and information with regards to wildlife producers and



wildlife production units is needed to act as a starting point for deeper analysis. The data and information needed includes the physical, management and infrastructural aspects of the wildlife production units currently in operation in the Western Cape. Information that should also be revealed is the contribution of the wildlife industry to job creation, the past growth and future expansion potential of the wildlife industry in the Western Cape Province over time and the demographic profile of a wildlife producer, to emphasise the contribution of the wildlife industry to the province.

### **1.3.2 Sub-problem 2**

#### **Analyse wildlife production systems to identify typical wildlife production system(s).**

After wildlife production system(s) in the Western Cape Province have been identified, depending on the data and the quality of the data, an attempt will be made to identify a typical wildlife production system in each of at least three regions within the province. The identification of these production units will provide the opportunity for further in depth evaluation of these typical system(s).

### **1.3.3 Sub-problem 3**

#### **State the dimensions and criteria of the evaluation.**

An evaluation needs to be based on certain criteria, to guide the evaluation process. In order to do an in depth evaluation of typical wildlife production system(s), a set of dimensions is needed on which the evaluation will be based. These dimensions should be well defined.

### **1.3.4 Sub-problem 4**

#### **Evaluate typical wildlife production system(s).**

To assist current wildlife producers, as well as potential entrants into the wildlife industry, it is important to reveal the financial performance of typical wildlife production system(s). It is therefore necessary to evaluate each wildlife production system according to the dimensions stated. To be able to do that, more detailed information, such as the value of income sources and expenditure, will be needed regarding the financial performance of these typical wildlife production units. Wildlife producers, by joining a discussion group together with other wildlife producers, involved

with the same typical wildlife production system in the same area will be able to supply valuable financial and other information for such an evaluation.

### **1.3.5 Sub-problem 5**

#### **Identify critical success factors in typical wildlife production system(s).**

In any business there are certain success factors that will influence the financial performance of the business in either a direct or an indirect manner. It is important to identify the critical success factors that will influence the dimensions that are going to be used to evaluate the typical wildlife production system(s).

## **1.4 METHODS USED IN THE STUDY**

To describe the characteristics of wildlife production units in the Western Cape, a short questionnaire was sent to all wildlife producers in the Western Cape whose names and contact details could be found. Information gathered from these questionnaires was used to identify typical wildlife production systems. Wildlife producers from wildlife production units that fit the profile of such a typical system were invited to a wildlife discussion group meeting. At this meeting, a more detailed questionnaire was completed by recording the answers given by wildlife producers after consensus was reached. Using the data collected from these meetings, the financial performance of each typical wildlife production system was measured and typical success factors were identified.

## **1.5 DELINEATION OF THE RESEARCH**

This study will concentrate on the evaluation of different wildlife production systems, which will probably include mixed systems with domestic livestock as well as wildlife. It, however, will not give specific attention to the viability of the transition from domestic livestock production to wildlife production.

Although some of the wildlife producers are probably situated in areas where initiatives are developed to establish natural migrating routes for wildlife, this study will not focus on the effect such initiatives for wildlife migrating routes may have on wildlife producers or the wildlife industry.

The impact of “green hunting” on the wildlife industry is not investigated in this study.

The focus of this study is on wildlife species that are indigenous to South Africa. Hardly any attention is given to the economic impact of exotic wildlife species on the wildlife industry or conservation.

The study will focus on wildlife production systems in the Western Cape Province. The wildlife production systems that will be evaluated are those that are currently implemented in the Western Cape Province and not necessarily ideal wildlife production systems for a specific area.

The results of this survey depend on the level of response, openness and honesty of respondents at the time of completing the questionnaires. This means that the results only reflect information that was made available by respondents and may not necessarily reflect the true situation.

## **1.6 OUTLINE OF THE THESIS**

Chapter 1 gives a brief background and short motivation for this study. Some important terms are clarified and the problem is stated. The literature review is done in Chapter 2 and this gives an overview of the South African as well as the Western Cape wildlife industries. In Chapter 3, the method followed in this study is explained in detail. The results of the baseline survey, which describes the characteristics of the Western Cape wildlife industry, are captured in Chapter 4, whereas the results of the evaluation of the typical wildlife production systems are revealed in the fifth chapter. Chapter 6 provides general conclusions and recommendations.

## **CHAPTER 2**

### **LITERATURE REVIEW**

The literature review explores the history and current status of the wildlife industry in South Africa as well as in the Western Cape Province of South Africa. The role of private wildlife production units and the different production systems in use are also discussed.

#### **2.1 THE SOUTH AFRICAN WILDLIFE INDUSTRY**

Towards the middle of the 20<sup>th</sup> century, wildlife had no monetary value as it was regarded as a competitor for grazing land (Dry, 2009). The wildlife industry however, showed extraordinary growth once it started to become commercialised some 50 years ago and it is still expanding (Bothma, 2002; Reilly *et al.*, 2003). Today, without doubt, this multi-million Rand industry (Bothma, 2004) plays a major role in the economy of southern Africa (Bothma, 2002).

##### **2.1.1 History**

Over the last 150 years, transformations have occurred in the way people value and respect animals in the wild as well as in their behaviour toward these animals (Carruthers, 2005). Initially, wildlife was regarded as part of nature; belonging to nobody and therefore could be hunted by anyone (NAMC, 2006). The attitude towards wildlife from the 1840's was one of utilisation for survival by meat consumption as well as receiving a dependable income from ivory and hides exports (Carruthers, 2005). Sport hunting was also common at the time. By the end of the 19<sup>th</sup> century, the wildlife numbers declined substantially (Carruthers, 2005) and the increase in the use of snares and firearms into the 20<sup>th</sup> century led to wildlife numbers further declining at an alarming rate (Pollock, 1969). Public awareness and concern introduced new values (Carruthers, 2005) and a positive pressure towards conservation gradually commenced (Pollock, 1969). However, some people did not care as much as others (Carruthers, 2005).

During the first half of the 20<sup>th</sup> century, commercial livestock and crop farming industries were major contributors to South Africa's GDP and agriculture was therefore of high priority. Wildlife, on the other hand, had almost no monetary value (NAMC, 2006). It was seen as an unwanted competitor for limited grazing land and the absence of wildlife was presumed an advantage when land had to be sold (NAMC, 2006). Wildlife was also believed to spread diseases to domestic livestock, threatening the growth of this industry (Carruthers, 2008b). The drive was to rather get all land in some kind of "productive" use (Carruthers, 2008b). In some cases where commercial

agriculture was threatened by wild animals, government intervened by exterminating these animals (Carruthers, 2008a).

Conflict between human and wildlife increased because of the growing human population and the expansion of agricultural land. Government accommodated this by fencing off most of the remaining large and dangerous wildlife. The Kruger National Park was established in 1926, followed by the Addo, Bontebok and Kalahari Gemsbok (today known as Kgalagadi) National Parks in 1931 (NAMC, 2006).

By the second half of the 20<sup>th</sup> century, people's attitudes regarding wildlife management and also in regard to the value of wildlife, slowly started to change (Carruthers, 2008a). Some landowners started to realise that wildlife production could be an alternative to domestic livestock or other agricultural enterprises (NAMC, 2006) and started to "farm" these animals (Carruthers, 2008a). The extremely low prices initially reached were not encouraging to commercial farmers (Carruthers, 2008a), but the economic value attached to wildlife caused the industry to slowly gain momentum (NAMC, 2006). During the early 1960's, the phenomenon of becoming game meat producers started on South African wildlife units (Pollock, 1969). In the 1970's, ecotourism became a growing sector in South Africa (Carruthers, 2008a) and from the 1980's prices for wildlife species rose continuously (Carruthers, 2008a).

The increase in the monetary value ascribed to wildlife caused a dramatic increase in species numbers into the 21<sup>st</sup> century (ABSA, 2003), with a trend towards converting from domestic livestock to wildlife production (Steenkamp *et al.*, 2005). Not only did the growth in monetary value of wildlife played a role in this phenomenon, but there were also some structural challenges with which domestic livestock farmers were confronted (ABSA, 2003). The deregulation of the agricultural sector; resulting in lower product prices, increased land claims and the dramatic increase of stock theft are only a few of the challenges that caused the domestic livestock farmers to make crucial adjustments (ABSA, 2003; Cousins *et al.*, 2008). For these reasons, wildlife production, being an economic alternative to domestic livestock (ABSA, 2003), excelled amongst livestock farmers and many former domestic livestock units today are partially or fully transformed into wildlife production units (Bothma & Van Hoven, 1993).

### **2.1.2 Current status of the South African wildlife industry**

The number of wildlife in South Africa today, is larger than was the case for many decades and numbers are possibly as high as in the early 19<sup>th</sup> century (Carruthers, 2008a). The main difference is that wildlife is not considered to be a common good anymore and it mainly occurs in fenced

areas (Carruthers, 2008a) owned by either private wildlife producers or by the government (NAMC, 2006).

The South African wildlife industry, during the 10 year period from 1993 to 2003, expanded at a rate of 5% per annum in real terms (ABSA, 2003; Bothma, 2004). Private wildlife production units increased in number from less than 1 000 in the late 1970's to an estimated 9 000 in early 2000 and there could be more than 10 000 today (Bothma, 2004; Steenkamp *et al.*, 2005). This is an unexpectedly large number of wildlife production units and this figure could therefore be questioned. If compared to the census of commercial agriculture, the 9 000 units in 2000 are 19.6% of the 45 818 farming units recorded in 2002. The estimated 10 000 units today implies that 25% of South Africa's almost 40 000 farming units, according to the census of 2007 (Statistics South Africa, 2010), is under wildlife production.

Fifty percent of wildlife production units are situated in the Limpopo Province, followed by 19.5% and 12.3% in the Northern Cape and Eastern Cape Provinces respectively (Bothma, 2004; Dry, 2009). In both 1998 and 1999 the area of wildlife-fenced units increased by 2.5% annually, which represented an increase of about 300 000 hectares per annum (Bothma, 2002), while the estimated increase by 2004 was 500 000 hectares per annum (Bothma, 2004). Private commercial wildlife production units currently cover an area of approximately 20.5 million hectares (Cousins *et al.*, 2008; Dry, 2009; NAMC, 2006). This figure is also unexpectedly high since 24% of South Africa's 84 million hectares of grazing land is therefore under private wildlife production. The calculation of this number, however, was not explained.

The private wildlife industry is an important contributor to the economy of South Africa with an income contribution of R4.7 billion per annum (Dry, 2009; NAMC, 2006) by some of the most common sub-sectors. The major contributor to this total is the biltong hunting sub-sector, which contributes 66% or R3.1 billion to the total (Carruthers, 2008a; Dry, 2009; NAMC, 2006). The other sub-sectors (refer to Table 2.1) are the translocation of live animals contributing R750 million, the trophy hunting industry contributing R510 million, taxidermy contributing R200 million, the sub-sector for live animal sales at auctions, contributing R94 million, and meat production contributing R42 million (Carruthers, 2008a; Dry, 2009; NAMC, 2006). All these figures reflect the total contribution of each sub-sector, which include not only the value of wildlife species, but also other income related to it. A few examples would be income from accommodation, fuel, food, meat processing and ammunition (Saayman & Van der Merwe, 2006).

**Table 2.1: Income contribution of some of the most common sub-sectors in the South African wildlife industry, 2006**

Sub-sector	Income Contribution (R'000 000)	Percentage (%)
Biltong hunting industry	3 150	66
Trophy hunting industry	510	11
Live animal sales at auctions	94	2
Meat production	42	1
Translocation of live animals	750	16
Taxidermist	200	4
<b>Total</b>	<b>4 696</b>	<b>100</b>

Source: Dry (2009) and NAMC (2006)

The census of 2007, recorded a gross income from hunting of R197 616 000 in South Africa. This figure is way below the figures for hunting mentioned above. The census, however, only reflects the income earned from the animal itself, and therefore probably excludes income from accommodation, for example. It should also be kept in mind that this figure includes only income earned on farm-level, and does not reflect the multiplier effect of income contribution to the country through expenses such as fuel. This census also recorded a gross income from live sales of wildlife for R203 697 000. This time around, the census's figure is way above the figure mentioned for live sales by Dry (2009) and NAMC (2006). The census figure, however, probably includes private sales of wildlife and not only wildlife sold on auctions. These figures are, for the reasons stated above, not comparable.

Furthermore, there is the contribution from the ecotourism industry which is an additional income to the wildlife industry and accounts for R1 billion. By taking its multiplier effect, including industries such as airlines, outdoor equipment and accommodation, into consideration, it adds up to R2 billion (ABSA, 2003). In the census of 2007, ecotourism is indicated to earn an income of R73.8 million. Once again this figure does not match with the figure used by ABSA (2003). It could be that the term "ecotourism" as used by ABSA (2003) in this case also include non-wildlife ecotourism activities such as hiking trails or rock art, in the absence of wild animals. However, the income generated from ecotourism that was recorded in the census only includes income received by wildlife producers on farm-level.

A major tourist attraction is the availability of the "big five", for which Africa is well known (Kerley *et al.*, 2003). The "big five" includes the species buffalo *Syncerus caffer*, elephant *Loxodonta africana*, leopard *Panthera pardus*, lion *Panthera leo* and rhinoceros *Diceros bicornis* (Cousins *et al.*, 2008; Kerley *et al.*, 2003).

The distribution of income obtained from hunting, ecotourism and live sales varies between different regions of South Africa and depends on the variety of species (Cousins *et al.*, 2008), the distance from large cities and the availability of the “big five” (ABSA, 2003; Spenceley, 2007). In the Bushveld region of the country, 60% to 65% of the total income gained from wildlife production comes from trophy and biltong hunting, while 5% to 10% comes from wildlife-viewing and the rest from live sales at auctions (ABSA, 2003; Spenceley, 2007).

Employment opportunities open up in all sub-sectors (ABSA, 2003) and the industry’s contribution to job creation is noteworthy (Reilly *et al.*, 2003) as 65 000 people are currently employed for wildlife activities on wildlife production units (Dry, 2009). Where people employed for ecotourism activities on these wildlife production units are included, it adds up to more than 100 000 employment opportunities (Dry, 2009). It was estimated that eight permanent employment opportunities are created for each tourist visiting South Africa (NAMC, 2006). This is a labour intensive industry (Steenkamp *et al.*, 2005) as each wildlife production unit created an average of six jobs in 1998 (Bothma, 2004; Steenkamp *et al.*, 2005), nine jobs in 2000 (Bothma, 2004; NAMC, 2006) and 11 jobs in 2004 (NAMC, 2006). Wildlife production creates 3.5 times more jobs than domestic livestock farming and these employees earn 5.7 times the salary (NAMC, 2006). There are also many other spin-off employment opportunities from wildlife production for example ecologists, veterinarians, wildlife capturers and transporters, contractors, construction workers and catering staff (Bothma, 2004).

The rapid growth of the wildlife industry was mainly triggered by the increase of the economic value of wildlife that gained momentum (NAMC, 2006). Because of this value, an incentive was born to properly manage and take care of wildlife by applying conservation principles (NAMC, 2006). The South African wildlife industry is currently the only extensive animal production system in the country that is still spatially expanding and growing economically (Bothma, 2002; Reilly *et al.*, 2003; Van der Waal & Dekker, 2000). South Africa today is a world leader in the sustainable utilisation of indigenous wildlife species (NAMC, 2006).

### **2.1.3 Wildlife production systems**

There are two distinguishable enterprises (Cousins *et al.*, 2008) with totally different production strategies known within the wildlife industry, namely the intensive wildlife production and extensive wildlife production systems (Bothma, 2002; Cousins *et al.*, 2008; Steenkamp *et al.*, 2005). There are considerable differences between these two systems (DEAT, 2005).



Intensive wildlife production systems are dependent on human intervention and are considered an agricultural production system, whereas extensive wildlife production systems are self-sustaining, with minimal human intervention (DEAT, 2005).

The intensive wildlife production system is a management approach where animals are bred in small fenced enclosures (Bothma & Van Hoven, 1993; Bothma, 2002; Bothma, 2005), in a wild to semi-wild or sometimes even fully domesticated state (Bothma & Van Hoven, 1993), with a high intensity of management and control. Supplementary feeding is normally provided on a regular basis (Carruthers, 2008a), which make these animals fully dependent on human intervention (DEAT, 2005). The production of marketable animal products, such as meat, skin, feathers and hides (Bothma, 2002), and the breeding of rare, high-value wildlife species are the drivers for this system (Steenkamp *et al.*, 2005). The production of rare species is usually for the purpose of re-introducing it into the wild (DEAT, 2005). Ostrich *Struthio camelus* and crocodile *Crocodilus niloticus* production systems and the breeding of buffalo and sable antelope *Hippotragus niger* are examples of such systems (Bothma, 2002). Intensive wildlife production is also known as “wildlife farming” (Bothma, 2002) and is managed by “intensive wildlife producers” (Bothma, 2005).

The extensive wildlife production system is the managed production of free living wild animals on a large (Benson, 1991; Bothma, 2002), usually fenced (Cousins *et al.*, 2008), area, with minimal human intervention in the form of water provision, food supplementation, parasite control and health care provision (Dry, 2009; NAMC, 2006). This is a production system that contains a variety of indigenous wildlife species (NAMC, 2006), which are self-sustaining (DEAT, 2005) and utilise a wide range of vegetation (NAMC, 2006) that meet their requirements for grazing, browsing, habitat and social needs (NAMC, 2006; Steenkamp *et al.*, 2005). The aim with this system is usually to sustainably utilise wildlife, which is a valuable natural resource (NAMC, 2006), to gain income through ecotourism, live sales, biltong hunting, trophy hunting or game meat (Bothma, 2002; Cousins *et al.*, 2008). Extensive wildlife production is also known as “wildlife ranching” (Bothma, 2002) and is managed by “extensive wildlife producers” (Bothma, 2005).

These two systems are not compatible as they have different objectives (Bothma, 2005). The intensive system is mainly driven by economic considerations, and exotic species may also be produced, whereas conservation principles play an important role in the extensive system, mainly because of the dependency of wildlife on the natural, indigenous vegetation for food and habitat (Bothma, 2005). Although it has commercial intent, extensive wildlife production is therefore not separated from or in competition with conservation (Joubert *et al.*, 2007). In fact, its success, especially its contribution to conservation (Cousins *et al.*, 2008), is likely due to the relatively high monetary value of wildlife (Tisdell, 2005).

#### **2.1.4 Financial aspects of wildlife production**

The wildlife industry has expanded rapidly over the past decades; nevertheless, no detailed economic data or analyses on the development or the benefits of this industry are available (Bothma, 2004). Some rough figures are, however, obtainable.

The development of a wildlife production unit or the conversion of a farm from livestock to wildlife production requires fencing, stocking of wildlife and the construction of other infrastructure, which results in large capital investments (NAMC, 2006). Furthermore, wildlife production has many facets all of which have financial implications (ABSA, 2003). These facets include biological elements, such as veterinary costs; ecological elements, which involve the management of wildlife numbers through harvesting by hunting or capturing and ecotourism elements, which consist of the management of lodges (ABSA, 2003).

##### ***2.1.4.1 Initial capital investments***

Wildlife production is a business that is highly capital intensive. When taking a look at the financial side of wildlife production it is, however, difficult to generalise because of the diverse values of wildlife and land. A wildlife production unit that is successful needs a minimum of R6.00 in capital outlay for every R1.00 generated yearly (ABSA, 2003). Roughly, a small wildlife production unit, with a capacity of 150 large stock units, needs a capital investment of at least R2.5 million, while a unit with a capacity of 1 000 large stock units will exceed R15 million in capital investment (ABSA, 2003; Dry, 2009). One large stock unit is defined as the equivalent of a steer of 450 kg, which gain mass of 500 g per day, grazing on grass with a 55% mean digestible energy concentration (Meissner, 1982). Conversion tables for certain wildlife species are available in Meissner (1982).

Looking at land prices, it is not easy to determine a consistent market value for land in different ecological areas due to the many variables influencing it. The price of a wildlife production unit may vary, by a factor of six, from another one with the same size, but in a different ecological area. Land prices<sup>1</sup> in South Africa are currently higher than the theoretical value<sup>2</sup> of land. Typically, the smaller the wildlife production unit, the higher the price paid per hectare tends to be (ABSA, 2003). Establishing infrastructure, such as the fencing of a property for wildlife production can be very costly. It can reach a cost of R30 000 per kilometre for new fencing (NAMC, 2006). Apart from fencing, other infrastructure needed for the handling of wildlife is also required. This could include

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<sup>1</sup> The term "Land prices", as used by ABSA (2003), refers to the market value of land

<sup>2</sup> The "theoretical value" of land, as used by ABSA (2003), refers to the agricultural value of land

offloading ramps, holding pens, watering points and lookout points (ABSA, 2003). Furthermore, fixed improvements such as garages, carports, stores, slaughtering facilities, cold rooms, kitchen facilities, reception areas and staff quarters are typical on wildlife production units (ABSA, 2003). Where accommodation is made available for ecotourism purposes, major infrastructure costs will be added to the above costs (NAMC, 2006).

Vehicles and equipment are required, especially if ecotourism is a major income source. Wildlife production units need a minimum of one pickup truck, and depending on ecotourism involvement, a number of vehicles for wildlife-viewing. Equipment, such as two-way radios, dart guns, rifles, tools, generators and water pumps are also needed on a wildlife production unit (ABSA, 2003).

A wildlife production unit can be bought fully stocked with wildlife, partially stocked, or without any wildlife on it. For the maximisation of income from hunting or ecotourism, a fully stocked wildlife production unit is required. Prices paid for wildlife may differ significantly between those sold live at auctions, those for trophy hunting and those for biltong hunting. Auction prices are significantly higher than the price of an animal hunted for biltong, but more or less equal to the price of an animal hunted for its trophy. The price paid at auctions is adjusted to cover capturing and transport costs. It is difficult to set a standard price for different wildlife species due to several factors that play a role in determining the value of the animal. These factors include the age of the animal, the number of animals sold, the sex of the animal, the scarcity or abundance of the species, the location where the animal is captured, the destination where the animal is going to be released, the general health of the animal, the difficulty to capture or transport certain species, the season in which it is sold, the reputation of the dealers, the insurance status of the animals and interest rates as well as credit availability (ABSA, 2003). The poaching of rhinoceroses for their highly valuable horns, which is currently problematic, has an enormous impact on not only biodiversity (Goma *et al.*, 2010), but also capital losses.

Besides capital investments, wildlife producers are also confronted with some current expenditure (ABSA, 2003).

#### **2.1.4.2 Expenditure on wildlife production units**

Wildlife production units usually have a significant amount of current expenditure, which can easily be covered by current income on a well managed wildlife production unit (ABSA, 2003).

At least two workers are needed on a wildlife production unit and on larger units, a qualified wildlife manager. On really large units, a general manager, wildlife warden and accountant need to be appointed. Workers should be paid at least the minimum wage as set by legislation. Apart from

the salaries and wages, other expenditure applicable to employees, like the cost of uniforms, overtime, medical aid contributions, cost of sick leave, pension provision, paid leave and maternity leave should be added (ABSA, 2003).

Expenditure for maintenance to buildings, roads and water structures as well as for the purchasing of hardware, tools, cement and paint can be costly. Fortunately, maintenance costs on a wildlife production unit, however, are only half of those on a livestock farm (ABSA, 2003).

To ensure an acceptable occupancy rate, especially on isolated wildlife production units, advertising needs to be done. It is worthwhile to spend money on marketing as this will lead to an increased income (ABSA, 2003).

A wildlife census should be done at least every fourth year. It is important to monitor animal numbers so as to determine the number of animals that could be harvested and to pick up information that would show the need for management intervention. A wildlife census using a helicopter is an expensive, but effective method (ABSA, 2003).

Catering can be very expensive, especially if tourists or hunters are fed three times a day. Furthermore, other expenditure like bank charges, insurance costs and veterinary costs also occur (ABSA, 2003).

Although wildlife production is a capital intensive business (ABSA, 2003), with a lot of current expenditure, it has various types of utilisation. These sources of income could make it a profitable product per unit of land (Bothma, 2004).

#### ***2.1.4.3 Sources of income from wildlife production***

Income can be derived through (amongst others) ecotourism, live animal sales, trophy hunting, biltong hunting (Carruthers, 2008b; Joubert *et al.*, 2007) or meat production (Bothma, 2004). These sub-sectors of the wildlife industry are all fairly well organised (NAMC, 2006).

#### **Ecotourism**

With tourism in South Africa being amongst the largest (Hoffman *et al.*, 2003) and fastest growing industries (NAMC, 2006), it plays an increasingly important role (Cloete *et al.*, 2007) in the South African economy. South Africa is a popular tourism destination as it offers unique attractions to both the local and international tourism market (ABSA, 2003). The country's rich variety of wildlife

species certainly is one of the major tourist attractions (ABSA, 2003; NAMC, 2006). The “big five” is found nowhere outside of Africa and South Africa alone houses more than 300 mammal species, about 900 different bird species and in the region of 24 000 plant species (ABSA, 2003). The country is also blessed with a moderate and mostly sunny climate (NAMC, 2006) as well as a clear night sky for star observation (ABSA, 2003). Furthermore, infrastructure (ABSA, 2003; NAMC, 2006), transport and communication are efficient, medical facilities are excellent, water is clean and safe to drink and food is of the best Western standards (ABSA, 2003).

South Africa has, out of all the “Southern African Development Community” (SADC) countries, the highest share of tourism arrivals and income (Carruthers, 2008a) and most tourists to the region from developed countries, who are those that have money to spend, include South Africa in their vacation itinerary (NAMC, 2006). About 30% of the total that foreign visitors spend in South Africa is mobilised by the wildlife industry itself (NAMC, 2006) and of the two million tourists that came from developed countries in 2005, 60% were coming for wildlife purposes in particular (NAMC, 2006).

Although ecotourism is capital- and labour intensive and requires trained personnel, it can be profitable with a healthy cash flow (ABSA, 2003). Ecotourism generates money by making available accommodation, wildlife-viewing, 4x4 trails, hiking trails (NAMC, 2006), bird watching, night drives, photographic safaris, horse trails, catering (Bothma, 2004) and conference facilities (ABSA, 2003). Income however varies and depends on the type of facilities available, the number of beds and the rates thereof (Spenceley, 2007).

The benchmark for the pricing of lodging facilities is set by South African National Parks as well as the guesthouse and bed-and-breakfast industry. A wildlife production unit that houses the “big five” for ecotourism purposes competes successfully with the Kruger National Park and can even reach triple that income because of added services and luxuries. Smaller wildlife production units’ price ranges are set by the bed-and-breakfast industry and can in the absence of the “big five” receive more than twice the price of a typical guesthouse. The “return on capital invested”<sup>3</sup> for a large ecotourism wildlife production unit is around 10% per annum. If effort is put into marketing on local and international level, occupancy rates can increase from the estimated 50% to 75% per annum, which will result in a “return on capital invested” of 16% (ABSA, 2003).

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<sup>3</sup> The term “return on capital invested”, as used by ABSA (2003), relates to the correct agricultural economic term, “farm profitability” as it is calculated by expressing the “net operating profit” (“net farm income” in correct agricultural economic terms) as a percentage of the capital investments made (“total capital employed”).

Tourists do not spend money on only accommodation and other wildlife related activities (Saayman & Saayman, 2006). There is also the multiplier or ripple effect of spending money within the local economy, ensuring a link between the wildlife industry and almost all other industries (Saayman & Saayman, 2006). The South African tourism industry directly employs about 600 000 people, but when the multiplier effect is taken into consideration, another 500 000 jobs are added from industries such as food and beverage suppliers, fuel and electricity suppliers and wholesalers (ABSA, 2003).

South Africa's budget for conservation purposes is reduced on a yearly basis and therefore conservation is becoming more reliant on income from ecotourism. Financial support for conservation, obtained from ecotourism income, can be a sustainable investment. Conservation areas can be expanded by using this funding, which will generate more income that can be used for further conservation priorities (Saayman & Saayman, 2006). Ecotourism gradually becomes more recognised to be a symbol of sustainable development but equally also conservation ideals (Saayman & Saayman, 2006) as wildlife producers are applying conservation principles (Cousins *et al.*, 2008).

Large predators, such as lion and leopard are very attractive to tourists and they play a significant role in the ecosystem. The population of wildlife on large wildlife production units is usually in equilibrium, close to the ecological capacity. This is because of predators that control the populations' numbers, by preying on them. In the absence of large predators, however, and without any management, wildlife numbers will keep on growing until it exceeds the ecological capacity, which will lead to over-grazing and eventually a decline in animal and veld condition. Surplus wildlife therefore has to be removed or "harvested" from wildlife production units (ABSA, 2003). One way of harvesting is to capture these animals to be sold at a wildlife auction (ABSA, 2003; Cousins *et al.*, 2008).

### **Live animal sales**

Live animal sales at wildlife auctions became an important and legitimate method of trading in the wildlife industry (Bothma, 2002). These auctions are used to trade large numbers of surplus stock and it became an essential part of the industry (NAMC, 2006). Wildlife bought at wildlife auctions, are used to stock newly established wildlife production units, add to existing breeding stock and to introduce new species onto wildlife production units (Steenkamp *et al.*, 2005).

This mechanism is a very popular tool used by wildlife producers and government conservation authorities to generate income. Despite the fact that this form of trading is so popular, only a third of live animals sold, are traded through auctions. The others are traded either directly between the

seller and the buyer, by making use of wildlife capturers or through the tender system, mostly in the case of government. Auctions remain, however, an important price setting instrument (NAMC, 2006).

There are two types of auction systems, namely boma auctions and catalogue auctions (NAMC, 2006). For boma auctions, animals are captured in advance, transported to a holding facility and held in pens until the auction, where prospective buyers may view them (Bothma, 2002). After the animal is bought on the auction, it is transported from the boma to the buyer's premises (NAMC, 2006). With catalogue auctions, the seller places the animals on offer in the central catalogue of the auction, in the form of a brochure or electronic media (NAMC, 2006), which is distributed to all prospective buyers (Bothma, 2002). The animals are not physically viewed before the auction (Bothma, 2002) and are transported only once, from the seller's to the buyer's premises after the auction (NAMC, 2006).

Wildlife sold on catalogue auctions in 2000 reached a mean price paid per species of only 93.9% of the mean price reached at boma auctions (Bothma, 2002). However, only 10% of wildlife is sold by means of catalogue auctions (NAMC, 2006). The reason for this could be the risk involved in the buyer not knowing exactly what he is buying, as animals are bid on and bought unseen. There are, however, also advantages for buying at catalogue auctions. Animals are not exposed to the stress of adapting to captivity in a boma and because they are transported only once, it also reduces a lot of stress. This is important, especially when buying or selling rare, high-value animals. It could be assumed that more rare species than common species are sold on catalogue auctions, since the mean price paid per animal is usually higher for catalogue auctions than boma auctions (Bothma, 2002).

Common species, including impala *Aepyceros melampus*, blesbok *Damaliscus pygargus phillipsi*, springbok *Antidorcas marsupialis*, blue wildebeest *Connochaetes taurinus taurinus* and eland *Taurotragus oryx*, sold on wildlife auctions during 2005 represented 53% of all animals sold, but were responsible for only 14% of the monetary value. The more rare species, and therefore more expensive, such as disease-free buffalo, sable antelope, white rhinoceros *Ceratotherium simum*, Livingstone eland *Tragelaphus oryx livingstonii* and nyala *Tragelaphus angasii*, represented only 10% of all animals sold, but were responsible for 61% of the monetary value (NAMC, 2006).

Over the period 1991 to 2006, the wildlife industry grew at an average rate of approximately 20.3% per annum, measured in terms of the turnover at auctions (Dry, 2009; NAMC, 2006). The total turnover at auctions in 1991 was just below R9 million and it grew to more than R93 million in 2005 (refer to Table 2.2).

**Table 2.2: The growth of the live sales at auctions sub-sector of the South African wildlife industry (1991 – 2005)**

Year	Number of animals sold	Change over previous year (%)	Turnover excluding VAT (R)	Change over previous year (%)
1991	8 292		8 999 871	
1992	9 546	15.12	10 859 969	20.67
1993	11 449	19.94	11 732 596	8.04
1994	11 096	-3.08	11 705 605	-0.23
1995	9 171	-17.35	14 335 894	22.47
1996	11 340	23.65	26 559 557	85.27
1997	12 077	6.50	28 526 052	7.40
1998	14 354	18.85	40 017 946	40.29
1999	15 455	7.67	53 705 823	34.20
2000	17 702	14.54	62 960 451	17.23
2001	17 282	-2.37	87 000 473	38.18
2002	20 022	15.85	105 192 180	20.91
2003	19 645	-1.88	102 420 445	-2.63
2004	21 101	7.41	104 547 756	2.08
2005	17 569	-16.74	93 549 300	-10.52

Source: NAMC (2006)

This can be compared to the field crop sector, which grew on average with 10.4%, the horticulture sector which grew with 12.1%, and the animal production sector which grew with 9.5% over the same 15 year period (NAMC, 2006). The total turnover at the end of 2010 grew to a new record of more than R303 million (refer to Table 2.3). According to the statistics of Cloete (2011), a total turnover of R316 million were generated on auctions during 2010.

**Table 2.3: The growth of the wildlife industry (2006 – 2009)**

Year	Number of animals sold	Change over previous year (%)	Turnover excluding VAT (R)	Change over previous year (%)
2006	15 697	-10.66	94 821 703	1.36
2007	12 084	-23.02	91 880 192	-3.10
2008	12 206	1.01	144 259 757	57.01
2009	14 047	15.08	255 158 804	76.87
2010	13 973	-0.53	303 570 757	18.97

Source: Nowers (2011)

During 2005 (refer to Table 2.4), Limpopo was the province that was responsible for the most auctions, selling the highest number of animals and receiving the highest turnover in the country (NAMC, 2006).



**Table 2.4: Breakdown of live sales at auctions in seven provinces of South Africa for 2005**

Province	Total number of animals sold	Percentage of animals sold	Total Turnover excl. VAT (R)	Percentage of total turnover	Number of auctions
Limpopo	5 204	29.62	23 335 242	24.94	21
North West	3 805	21.66	11 483 845	12.28	9
Mpumalanga	1 018	5.79	15 724 288	16.81	6
Northern Cape	1 378	7.84	6 113 775	6.54	6
Eastern Cape	1 583	9.01	10 066 225	10.76	6
KwaZulu-Natal	1 193	6.79	8 765 375	9.37	1
Free State	3 388	19.29	18 060 550	19.30	7
<b>Total</b>	<b>17 569</b>	<b>100.00</b>	<b>93 549 300</b>	<b>100.00</b>	<b>56</b>

Source: NAMC (2006)

The capturing and translocation of animals for live sales at auctions is a stressful affair and casualties do take place. An alternative method used to control animal numbers is to remove them by means of hunting for either biltong or trophies (ABSA, 2003). Apart from live sales at auctions, hunting is currently a major economic force in the wildlife industry in South Africa (Bothma, 2004).

## Hunting

Hunting involves free-living wildlife within extensive wildlife production units and it is seen as not only an earner of income, but also a conservation tool to apply and manage conservation principles. The hunting industry in South Africa is unique in the sense that hunting mostly takes place on private wildlife production units and only limited hunting occurs on government conservation areas. Private wildlife producers, affiliated to hunting associations, are the people driving this industry (DEAT, 2005).

South Africa is the country with the largest number of wildlife species to hunt (DEAT, 2005). Two main types of rifle hunting can be differentiated in the wildlife industry, namely trophy hunting and biltong hunting (Bothma, 2002). Trophy hunters are mainly foreigners that hunt to keep some part of the animal as trophy, whereas biltong hunters are mainly local South African residents who hunt for the combination of the meat and the social experience (Steenkamp *et al.*, 2005).

Hunting, according to Benson (1991), being the most significant recreational activity of wildlife production in South Africa, is a source of income which is relied on heavily by the wildlife industry (Bothma, 2002). Both trophy and biltong hunting can be accepted as the main economic drivers of this industry (Cloete *et al.*, 2007), which together generated a gross output of R603 million by foreign and local hunters during 2000 (Humavindu & Barnes, 2003) and currently contributes R3.61 billion to the wildlife economy (Dry, 2009; NAMC, 2006).

## *Trophy hunting*

Trophy hunters tend to be foreigners who come to South Africa to hunt a certain number of specific wildlife species that has been determined beforehand (DEAT, 2005; Steenkamp *et al.*, 2005; Carruthers, 2008a). The trophy is usually the horns of a male herbivore or the skin of a carnivore (Steenkamp *et al.*, 2005).

South Africa has become one of the most popular hunting destinations amongst foreign hunters, mainly because it offers the greatest variety of wildlife species, including Africa's "big five", which are available to hunt here legally. Currently the country offers in the region of 65 species for trophy hunting. Furthermore, the country's good infrastructure makes South Africa a trouble-free and popular destination (NAMC, 2006).

About 85% of all Africa's trophy exports come from South Africa (ABSA, 2003). Trophy hunters mostly come from the USA followed by South America, Germany and Spain (ABSA, 2003) with an increased interest from the Asian and Pacific Rim countries (Bothma, 2002). South Africa is visited by more than 6 000 trophy hunters annually (ABSA, 2003). This number reached 6 673 during 2004 (Steenkamp *et al.*, 2005) and 7 500 hunters during 2005 (NAMC, 2006).

Trophy hunters have to be accompanied and supervised by a professional hunter at all times (DEAT, 2005; Steenkamp *et al.*, 2005). The harvest (removal) rate for trophy-hunted animals is much lower than that of harvest rates through biltong hunting (ABSA, 2003). To qualify as a suitable trophy animal, it has to have certain qualities (Bothma, 2002). It should typically be a male animal with large horns (Steenkamp *et al.*, 2005). The horns usually reach true trophy size when the animal is in its prime (Bothma, 2002) and usually not more than 5% of animals in a natural population will be of trophy quality (ABSA, 2003; Bothma, 2002; NAMC, 2006). When the overall harvest percentage of a certain species is calculated, the same percentage should be used to determine the number of animals amongst those with trophy quality that could be harvested. By doing that, and therefore not harvesting all available trophy animals, the sustainability of the gene pool will be ensured (Du Toit & Van Rooyen, 2006). Also, by taking off only a certain percentage of this 5% of the population, it is unlikely to experience a significant reduction in population numbers (Steenkamp *et al.*, 2005), therefore ensuring a low environmental impact (ABSA, 2003).

Trophy hunters are recognised as high-value, low impact tourists (NAMC, 2006) and the method of trophy hunting is accepted as an incentive for conservation (Lindsey *et al.*, 2006). An animal that is hunted for its trophy has a higher price than an animal of the same species hunted for biltong (DEAT, 2005). This is because trophy fees are determined on a free-market basis, whereas the price of a biltong-hunted animal is based on the value of its meat (DEAT, 2005). Trophy hunters

normally pay a higher fee per person than other tourists. This means that more income can be generated from a smaller number of people, which will result in a lower environmental impact (Lindsey *et al.*, 2006). Furthermore, some areas lack attractive scenery or high wildlife densities and therefore are not suitable for ecotourism (Lindsey *et al.*, 2006). In such areas, income for conservation can be generated through trophy hunting (Leader-Williams *et al.*, 2005; Lindsey *et al.*, 2006), being an incentive for the wildlife producer to conserve this natural environment instead of applying an alternative land-use.

Trophy hunting can therefore be seen as a conservation tool (Lindsey *et al.*, 2006) with low environmental impact and a high financial return (ABSA, 2003). This is especially true when rare, high-value species are available (ABSA, 2003). Trophy hunters prefer, and are willing to spend more, paying for rare species (Steenkamp *et al.*, 2005). This demand creates a positive incentive to breed rare species (Steenkamp *et al.*, 2005), therefore contributing to the conservation of endangered species (Lindsey *et al.*, 2006). White rhinoceros numbers, for example, increased from less than 100 to more than 11 000 after the hunting of these animals was allowed on private wildlife production units (Lindsey *et al.*, 2006).

Trophy hunting is marketed to foreign clients through trade shows or via the internet (DEAT, 2005). Trophies are usually offered in package deals, which, over a period of one week, for example, could include four to eight animals to hunt. Income derived from these packages not only includes the price of the animals hunted, but also accommodation cost, and fees charged by professional hunters, trackers, butchers and taxidermists. On average, trophy hunters stay for about 10 days, hunt more or less nine animals and spend in the region of R50 000 each, which excludes the price of the trophy (ABSA, 2003). In total, the value of the trophy hunting industry is estimated at R510 million per annum (Dry, 2009), which includes around R410 million for the value of animals hunted as well as approximately another R100 million for secondary expenditure such as accommodation and travel (NAMC, 2006).

In terms of consumptive utilisation methods of wildlife, trophy hunting is said to be the most profitable, representing a large and growing industry in many parts of Africa (Lindsey *et al.*, 2006). It is, however only responsible for a portion of hunting activities in South Africa (Steenkamp *et al.*, 2005) as the biltong hunting industry accounts for 85% of income contribution towards the total hunting industry (Dry, 2009; NAMC, 2006).

### *Biltong hunting*

The biltong hunting industry, with its contribution of R3.1 billion (Dry, 2009; NAMC, 2006; Radder & Bech-Larsen, 2008), not only makes the largest contribution towards the total hunting industry, but

also towards the whole South African wildlife industry (NAMC, 2006). It is estimated that South Africa has roughly 200 000 biltong hunters (Carruthers, 2008a; NAMC, 2006; Radder & Bech-Larsen, 2008), of whom 50 000 are regular hunters (Radder & Bech-Larsen, 2008). The calculation of the number of biltong hunters is not explained by any of the above authors, which raise some concern on the validity of this number.

Hunting is seen as an acceptable practice by some South Africans on condition that it is done ethically, which means the animal has a fair chance to escape from the hunter (Radder & Bech-Larsen, 2008). Biltong hunters are typically South African residents who, unlike the thinking of the common folklore, do not hunt only for purposes of getting meat, but also for the exceptional experience and the social aspects of it (Carruthers, 2008a; Radder & Bech-Larsen, 2008; Steenkamp *et al.*, 2005). Biltong hunters enjoy nature and the companionship of fellow-hunters (Radder, 2001).

The typical biltong hunter is usually an Afrikaans speaking, educated male person between the age of 40 and 64 (Carruthers, 2008a; Saayman & Van der Merwe, 2006), earning a salary of more than R250 000 per annum (Saayman & Van der Merwe, 2006). Hunters usually hunt three times per year (Radder & Bech-Larsen, 2008; Saayman & Van der Merwe, 2006), for a duration of four days per hunt and they prefer to travel in groups of average four persons (Saayman & Van der Merwe, 2006).

Seventy six percent of biltong hunters mainly hunt in South Africa (Saayman & Van der Merwe, 2006). Highly preferred provinces to hunt in are the Limpopo, Northern Cape and North West Provinces (Carruthers, 2008a; Saayman & Van der Merwe, 2006). Other countries that are hunted in by many South African biltong hunters are Namibia and Botswana (Saayman & Van der Merwe, 2006).

The average number of animals hunted for biltong is five animals per person (Van der Merwe & Saayman, 2006). With 200 000 biltong hunters in the country (Carruthers, 2008a; NAMC, 2006; Radder & Bech-Larsen, 2008), it is calculated that a total of one million animals are hunted annually (NAMC, 2006; Van der Merwe & Saayman, 2006).

The average total amount spent per hunter per season is R15 752 (Saayman & Van der Merwe, 2006). Almost 74% (R11 622) of this amount is spent on the price paid for species hunted (Saayman & Van der Merwe, 2006). When excluding the amount paid for species hunted, each hunter spends on average R4 130 per season (Saayman & Van der Merwe, 2006). Sixty percent of this amount is for accommodation (R869), fuel (R734), food and beverage (R452) and meat processing (R417) (Saayman & Van der Merwe, 2006).

With South Africa having 200 000 biltong hunters, it is concluded that in total R2.3 billion is spent annually on wildlife species hunted (Cloete *et al.*, 2007; NAMC, 2006; Saayman & Van der Merwe, 2006; Van der Merwe & Saayman, 2006), and R826 million on secondary expenditure (NAMC, 2006; Saayman & Van der Merwe, 2006). This adds up to the total of R3.1 billion spend by biltong hunters per annum (Saayman & Van der Merwe, 2006), which makes biltong hunting the largest contributor to the South African wildlife industry (NAMC, 2006).

Species utilised for biltong hunting are usually the less expensive but faster breeding and therefore more abundant species, instead of rare and valuable species (Steenkamp *et al.*, 2005). The top 10 most popular species hunted in South Africa by biltong hunters in descending order are springbok, impala, blesbok, kudu *Tragelaphus strepsiceros*, warthog *Phacochoerus africanus*, blue wildebeest, gemsbok *Oryx gazella*, eland, mountain reedbuck *Redunca fulvorufula* and red hartebeest *Alcelaphus buselaphus* (Van der Merwe & Saayman, 2006). The five most important species regarding income generation in descending order are kudu, blue wildebeest, impala, gemsbok and springbok (Van der Merwe & Saayman, 2006).

Although biltong hunting, because of the number of hunters, is the largest generator of income for the wildlife industry (NAMC, 2006), it is important to remember that trophy hunters spend more money per individual (Van der Merwe & Saayman, 2006). The whole hunting industry therefore is “big business” (Saayman & Van der Merwe, 2006), which creates an incentive to introduce breeding programmes to grow animal numbers (Van der Merwe & Saayman, 2006). This reveals a great potential for future growth in the money value as well as the conservation value of the hunting industry (DEAT, 2005).

## **Game meat**

Another way of generating income through wildlife, and therefore encouraging conservation (Van der Merwe & Saayman, 2006), is through game meat sales (ABSA, 2003). By producing game meat, habitat is managed through the removal of surplus wildlife and therefore the over-utilisation of vegetation is prevented (NAMC, 2006). The correct culling procedures are however of importance to maintain meat quality (Hoffman *et al.*, 2004).

Game meat is a protein with a lower fat and cholesterol content than other red meat such as beef, pork and mutton (ABSA, 2003; Hoffman *et al.*, 2003; Hoffman *et al.*, 2004; Hoffman *et al.*, 2005). The average fat content of game meat is a mere 2% to 3%. Furthermore the polyunsaturated fatty acid content is higher in game meat, while the content of saturated fatty acids is lower than in beef (Hoffman *et al.*, 2003; Hoffman *et al.*, 2004; Hoffman *et al.*, 2005). Game meat is however, not less juicy than beef (Hoffman *et al.*, 2003).

This health aspect is very important for younger consumers as they tend to consume healthier foods such as chicken and pork instead of red meat. They are also increasingly environment-conscious as they prefer food that is free-range and organically produced. Since wildlife production meets the requirements for organic agricultural enterprises, game meat can be acknowledged as organic produce (Hoffman *et al.*, 2003; Hoffman *et al.*, 2004).

Although ostrich meat has become a regular item in supermarkets and game meat is increasingly served at restaurants (Carruthers, 2008a), the market potential, locally and internationally, has not been unlocked yet (ABSA, 2003). Game meat has not been able to replace other red meat in South Africans' diet (Carruthers, 2008a), and therefore a stable game meat market has not been established. This is possibly due to the fact that it has not been marketed well (NAMC, 2006). This probably also includes the problem of not specifying the type of species whose meat is being sold. Tourists on vacation in South Africa like to enjoy game meat while they are in Africa, but would like to consume game meat when they are in their own country as well. This indicates an opportunity for exports (Hoffman *et al.*, 2003).

According to Carruthers (2008) and NAMC (2006), roughly 450 tons of game meat, to the value of R15 million, is exported annually, mostly to Europe. Van Hoven (2005) however, stated that the value of wildlife meat sold during 2000 was R20 million, while Dry (2009) is of opinion that South Africa exports 600 to 2 000 tons of game meat annually, valued between R60 million and R200 million. Although these are large amounts, the market is still not developed fully, which could be because of a lack of supply throughout the year and the lack of marketing of game meat (NAMC, 2006).

Wildlife producers are warned by some experts that a saturation point for ecotourism and live sales might be reached in future (Carruthers, 2008a), and that they should consider alternative sources of income to increase profitability (Hoffman *et al.*, 2003; Hoffman *et al.*, 2004). Game meat sometimes reaches high prices because it is seen as a luxury product (Hoffman *et al.*, 2004), and together with export opportunities this sub-sector has the potential to become one of the largest sources of income in the wildlife industry (NAMC, 2006).

#### **2.1.4.4 Profitability of wildlife production**

Wildlife production has the potential to be profitable and to have a healthy cash flow. It depends, however, largely on the size of the wildlife production unit, as wildlife production is sensitive to economies of scale (ABSA, 2003).

Wildlife production units that, for example, focus on hunting need to be large enough to be able to accommodate a minimum number of animals, equivalent to 350 large stock units, to be profitable (ABSA, 2003). Smaller wildlife production units, such as those having capacity to accommodate a wildlife equivalent of only 150 large stock units, are not profitable in the commercial sense of the word (ABSA, 2003; Dry, 2009). Depending on the species produced, though, it could be profitable, since high-value species would have a positive effect on profitability (Dry, 2009). A lot of wildlife production units run on skimpy profits, while some are even making a loss. These units are usually funded by part-time owners, making use of other income sources (ABSA, 2003).

Reasons for low profitability could be insufficient land size, and/or an inadequate sustainable utilisation of wildlife. Even larger wildlife production units sometimes struggle to equal the money market's risk-free rate, as a consequence of high land prices and low prices reached for wildlife sales. Generating profit, however, is not the only reason for getting involved with wildlife production. Other reasons might be to diversify agricultural activities, to utilise it as a stress reliever or the mere desire to have a piece of land to manage in a sustainable manner, therefore gaining psychological returns (ABSA, 2003).

ABSA (2003) uses two performance measures to determine the profitability of a wildlife production system, which they name the "net operating margin" and the "return on capital invested"<sup>4</sup>. Generally speaking, the "net operating margin"<sup>5</sup> on a wildlife production unit, depending on the area in which it is situated and the size of the unit, can range between 50% and 75%, while the "return on capital invested"<sup>6</sup> is more or less 10% per year on a large wildlife production unit that focuses on ecotourism (ABSA, 2003).

Table 2.5 illustrates the sensitivity of wildlife production to economies of scale. Like in agriculture, the larger the land size, the more profitable the business, *ceteris paribus*. The "return on capital

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<sup>4</sup> Although the terms "net operating margin" and "return on capital invested", as used by ABSA (2003), are not recognised agricultural economic terms, and the use of this terminology is questionable, it is necessary to discuss for doing comparisons at a later stage. Van Zyl *et al.* (1999) as well as Department of Agriculture (2005), correctly defines agricultural economic terms.

<sup>5</sup> The "net operating margin", as used by ABSA (2003), is calculated by expressing the "net operating profit" as a percentage of the "gross operating income". The "gross operating income" relates to the correct agricultural economic term, "gross margin" as the directly allocatable variable costs are already deducted. The "net operating profit" relates to the correct agricultural economic term, "net farm income" as it is calculated by deducting the "gross operating expenditure" ("overhead costs" in correct agricultural economic terms) from the "gross operating income".

<sup>6</sup> The "return on capital invested", as used by ABSA (2003), is calculated by expressing the "net operating profit" ("net farm income" in correct agricultural economic terms) as a percentage of the "capital investments" made. "Capital investments" include land and fencing, wildlife, buildings and infrastructure as well as vehicles. This term relates to the agricultural economic correct term, "farm profitability".

invested” of a wildlife production unit focusing on hunting almost doubles when the land size is increased from a 150 large stock unit capacity<sup>7</sup> to a 1 000 large stock unit capacity. Although a wildlife production unit in the Grasslands region of South Africa with a capacity of 150 large stock units is not very profitable, it is still more profitable than cattle production in the same area with a capacity of 1 000 large stock units (ABSA, 2003).

**Table 2.5: Profitability of wildlife production and cattle farming on land with different large stock unit capacities in the Grasslands region of South Africa**

Capacity	Wildlife production: hunting		Livestock production: cattle	
	“Net operating margin” (%)	“Return on capital” (%)	“Net operating margin” (%)	“Return on capital” (%)
150 Large stock units	51.8	5.9	20.9	2.4
600 Large stock units	66.3	9.1	28.4	3.7
1 000 Large stock units	67.9	10.3	32.6	4.5

Source: Dry (2009) and ABSA (2003)

The Grasslands region, which can result in a “return on capital invested” of more than 10% (refer to Table 2.6), is generally the most profitable region in Southern Africa for hunting (ABSA, 2003).

**Table 2.6: Profitability of wildlife production and livestock farming on land with a 1 000 large stock unit capacity in different regions of South Africa**

Area	“Net operating margin” (%)	“Return on capital” (%)	Area	“Net operating margin” (%)	“Return on capital” (%)
Hunting: Grasslands	67.9	10.3	Cattle: Grasslands	33.9	4.8
Hunting: Lowveld	76.1	3.0	Cattle: Lowveld	33.3	0.9
Hunting: Bushveld	76.7	5.7	Cattle: Bushveld	33.2	1.9
Hunting: Kalahari	68.8	9.0	Sheep: Kalahari	40.7	7.0
Hunting: Karoo	58.9	8.3	Sheep: Karoo	40.0	7.2
Ecotourism: Lowveld	76.3	10.9			
Ecotourism: Bushveld	68.8	13.0			

Source: Dry (2009) and ABSA (2003)

For ecotourism purposes, the Bushveld is the most profitable region, which can result in a “return on capital invested” of 13% (ABSA, 2003; Dry, 2009). In the Lowveld, the average price of land is high and wildlife is more expensive than in the other regions. On a wildlife production unit focusing exclusively on hunting, this results in a low “return on capital invested”. Livestock production in

<sup>7</sup> Large stock unit capacity refers to the ecological capacity of a wildlife production unit, but is expressed in terms of the number of large stock units it can absorb.



these two regions is even less profitable, with a “return on capital invested” close to zero. Hunting units in the Grasslands, Kalahari and Karoo regions compare well with ecotourism units in the Lowveld and Bushveld, mainly because of significantly lower land prices (ABSA, 2003).

Hunting package deals with hunting associations are usually set for longer periods. This makes hunting income more secure than income from ecotourism. By combining hunting and ecotourism side by side on large wildlife production units, or by arranging for hunting and ecotourism to occur during different times of the year on smaller wildlife production units, wildlife producers can succeed in obtaining the highest profitability (ABSA, 2003).

Livestock production in the Grasslands region shows a “return on capital invested” of almost 5%, whereas sheep production in the Kalahari and Karoo has a “return on capital invested” of around 7%. This compares to wildlife production that can range between a potential 3% and 13% per year on capital invested (ABSA, 2003). Although wildlife production is more profitable than livestock production, when considered as an investment opportunity, it might not be worth it. According to ABSA (2003), a return of investment of even 13% compares unfavourably with the money-market rate, which at the time of publication was 13.5%. It is, however, important to bear in mind that although not realised, the capital appreciation value of the land is not included. Although wildlife production is not necessarily a worthwhile investment, it can be a significant business proposition to escape from the rat race and, by doing that, contribute to conservation.

#### **2.1.5 The role of private wildlife production in conservation**

The conservation and utilisation of wildlife in South Africa, where wildlife belongs to the owner of the land provided that it is “exempted” or adequately enclosed, is very unique in comparison to the rest of the world (NAMC, 2006). When the wildlife industry started in the 1980’s, the government conservation authorities recognised its potential contribution towards the economy and the conservation status of South Africa, and therefore actively supported it (Bothma, 2004).

Initially, wildlife production was limited because of legislation that restricted the use and ownership of the wildlife (Bothma, 2004). After some time, new legislation, and together with it, the concept of “exempted” units was implemented, which enabled wildlife producers to utilise wildlife, by capturing, selling and hunting it, throughout the year (DEAT, 2005; NAMC, 2006) and that wildlife that escaped could be reclaimed if they could prove ownership of these animals (Bothma, 2004; NAMC, 2006). To qualify for exemption, wildlife production units need to have suitable fencing based on certain specifications as set by government conservation authorities (Bothma, 2004). Private land owners have therefore been given legal authority to manage wildlife on their land

however, within the regulations set by government conservation authorities (Benson, 1991). These property rights have encouraged the conservation of wildlife (Tisdell, 2005).

In spite of this legislation, South Africa continues to lose biodiversity, as it is the country with the second highest number of threatened species in southern Africa. The main reasons are conversion to cultivated land, urban sprawl, invasion of alien plants and plantation forestry (Cousins *et al.*, 2008).

#### **2.1.5.1 Conservation of biodiversity**

The International Union for the Conservation of Nature (IUCN) set the goal that 10% of land (Benson, 1991) or 12% of terrestrial and marine surface should be reserved for nature conservation globally (Dry, 2009). Africa conserves under government protection 11.2% of its total surface of which Zambia conserves 30%, Tanzania 28%, and Uganda 21% (Dry, 2009). The total terrestrial surface of South Africa is 122 320 100 hectares (The Directorate: Agricultural Statistics, 2010) and the area under government conservation 7.5 million hectares, including 22 national parks and 100 provincial parks (NAMC, 2006), which results in South Africa conserving only 6% of its terrestrial surface (DEAT, 2005; Dry, 2009; NAMC, 2006). National parks cover only 3% of this surface (ABSA, 2003; Carruthers, 2008a). Contrary to the statement of NAMC (2006), The Directorate: Agricultural Statistics (2010) state that 11.8 million hectare is utilised for nature conservation in South Africa. It is, however not clear if this figure includes land on private wildlife production units.

Because of South Africa's richness in biodiversity, it is internationally acknowledged as a conservation priority. Options to enlarge conservation areas under government protection are, however, limited due to several factors. Government budgets are diminishing in many provinces, making financing conservation a definite challenge and since 30% of land in South Africa is targeted for land redistribution, the purchasing of more land for conservation is not possible (Cousins *et al.*, 2008).

In the long run, the current 6% of government conservation areas is not only too small to protect biodiversity, but is also not representative of all the different vegetation types in the country (Cousins *et al.*, 2008). Private wildlife producers, however, have proven their capability and eagerness to provide for wildlife conservation on a larger area (Benson, 1991) and are covering many more vegetation types (Cousins *et al.*, 2008) than the government conservation areas. With private wildlife production units currently covering 20.5 million hectares (Cousins *et al.*, 2008; Dry, 2009), representing 16.8% of the country's area (Cousins *et al.*, 2008; Dry, 2009; NAMC, 2006) and raising the total area under conservation from 6% to almost 23% (NAMC, 2006), government

conservation authorities should consider involving private land owners in reaching conservation goals (Cousins *et al.*, 2008).

The recent increase in the number of privately owned wildlife production units has the potential and already does contribute largely to conservation in the country. Many working within the wildlife industry are familiar with the benefits that the private wildlife industry brings to conservation (Cousins *et al.*, 2008).

#### **2.1.5.2 Benefits reaped from the private wildlife industry**

With private wildlife production units currently covering 73% of the total area under conservation management in the country (Dry, 2009), the greatest contribution of these units to conservation is most likely the maintenance of natural areas (Cousins *et al.*, 2008). Especially with the scarcity of governmental funding for conservation (Cousins *et al.*, 2008; Leader-Williams *et al.*, 2005), this role is essential. The maintenance of natural areas keeps them from being transformed for other forms of land-use, such as agriculture or development, and protects vegetation types from radical transformation (Cousins *et al.*, 2008).

By maintaining habitat, private wildlife production units at the same time contribute towards species richness. Resources are provided to support reintroduction programs for threatened species and additional space is available for a variety of species; not only those that are introduced to the unit by the wildlife producer, but also those that move around freely (Cousins *et al.*, 2008).

A tragedy similar to both the bloubok *Hippotragus laucophaeus* and the quagga *Equus quagga*, that became extinct during the 19<sup>th</sup> century (Carruthers, 2008b; NAMC, 2006), almost recurred. The private wildlife industry's input in turning around that situation in the middle of the 20<sup>th</sup> century, when certain other species were facing extinction, cannot be denied (NAMC, 2006). Only 19 bontebok *Damaliscus pygargus pygargus*, less than 30 white rhinoceros and less than 90 Cape mountain zebra *Equus zebra zebra* were left in South Africa. Black wildebeest *Connochaetes gnou* occurred on only three farms at that stage (Bothma, 2004; Van Hoven, 2005). In 1975, the bontebok was listed as "rare"; meaning it was at risk because of either being limited to a small geographical area or thinly spread over a larger range. The Cape mountain zebra was listed as "threatened/rare", with "threatened" referring to animals that are threatened with extinction (Bothma, 1975).

These four species were foremost amongst those that, it is believed, were saved from extinction by private wildlife producers (Cousins *et al.*, 2008). The white rhinoceros, for instance, was reintroduced on wildlife production units and an increase to over 11 000 animals took place, after

legislation encouraged the limited utilisation by means of trophy hunting and live sales of this species (Leader-Williams *et al.*, 2005; Lindsey *et al.*, 2006). These economic forces encouraged wildlife producers to breed the species (NAMC, 2006), and today the number of white rhinoceros on private land in this country is more than on the rest of the African continent (DEAT, 2005).

Wildlife producers are working together more and more with conservation groups by providing resources to re-establish and breed rare and endangered species on their wildlife production units (Cousins *et al.*, 2008). The black rhinoceros *Diceros bicornis* is currently listed as an “endangered species”, referring to indigenous species that are “facing a high risk of extinction in the wild in the near future” (DEAT, 2005; DEAT, 2006). Mainly because of poaching for its horn, the black rhinoceros population decreased from about 100 000 animals in 1960 to a mere 3 000 animals recently (Bulte & Damania, 2005). During the last 15 years, private wildlife production units became involved with black rhinoceros conservation and are of great importance to its success. Government conservation areas are moving towards a state of full ecological capacity and by involving the private wildlife industry, black rhinoceros numbers can be increased by increasing available land, therefore providing new territory, essential for breeding (Cousins *et al.*, 2008; Leader-Williams *et al.*, 2005).

Large predators like cheetah *Acinonyx jubatus* and leopard, both listed as “vulnerable”, are seriously maltreated outside of government conservation areas (Cousins *et al.*, 2008). “Vulnerable” refers to indigenous species that face “a high risk of extinction in the wild in the medium-term future” (DEAT, 2005; DEAT, 2006). Again private wildlife producers throw in their weight in view of the fact that individual predators are often relocated to the safety of private wildlife production units (Cousins *et al.*, 2008).

The phenomenon of converting from domestic livestock to wildlife production units, also contributed noticeably to the reintroduction of many wildlife as well as a variety of amphibians, reptiles, birds and small mammal species that have not been on these units for years (Cousins *et al.*, 2008).

When taking a look at wildlife numbers, it becomes evident that the private wildlife industry plays a significant role in conservation. South Africa today has a larger number of wildlife than was the case for the past 100 years (Bothma, 2004), not only in government conservation areas, but specifically on private property (Carruthers, 2008a). There are an estimated two million large wild animals that are privately owned, which is approximately four times more than animals in government conservation areas (Dry, 2009; NAMC, 2006). During 2005, 76.6% of all wildlife sold was from private wildlife production units (refer to Table 2.7), obtaining 60% of the total turnover that year (Dry, 2009).

**Table 2.7: Number and turnover of wildlife species sold in South Africa during 2005**

Type	Total number of animals sold	Percentage of animals sold (%)	Turnover from animals sold (R)	Percentage of turnover (%)
Government	4 117	23.4	36 980 333	39.5
Private wildlife industry	13 452	76.6	56 568 967	60.5
<b>Total</b>	<b>17 569</b>	<b>100.0</b>	<b>93 549 300</b>	<b>100.0</b>

Source: Dry (2009)

By virtue of the fact that wildlife obtained an economic value, their numbers have increased and the threat to so many species that were on the edge of extinction until the 1960's is now something of the past (Carruthers, 2008a). For most wildlife producers, the conservation of threatened species is a higher priority than the maximisation of profit (Spenceley, 2007).

Other benefits that private wildlife production units have over government conservation areas are that changes to policy and administration can be implemented more rapidly, access to land can easily be restricted and since wildlife on these units is not public property, management decisions can be taken based on pure conservation principles (NAMC, 2006).

### **2.1.5.3 Limitations of and constraints in conservation faced by the private wildlife industry**

Although wildlife producers have, through the years, built a good reputation for conserving many plant and animal species (Benson, 1991), some limitations have been pointed out by government conservation authorities (Cousins *et al.*, 2008). Because private wildlife production is a business and not a conservation entity, the main challenge that wildlife producers face, is finding a balance between ensuring economic gain and complying with conservation principles (Cousins *et al.*, 2008).

Government conservation authorities are concerned that tourist preferences drive the private wildlife industry. This seemingly leads to an uneven representation of species as stocking is demand driven and exotic species, that could have a negative influence on other species, are often introduced. Another limitation according to government conservation authorities is that predators are maltreated, by means of trapping and hunting, to protect wildlife species of high commercial value that are bred on wildlife production units. Also, the resources made available on these units for conservation management and planning are said to be inadequate (Cousins *et al.*, 2008).

The question arises whether these limitations tend to be the norm or the exception. The unethical behaviour of a small number of individuals could, and probably already have, harmed the image of the whole private wildlife industry (DEAT, 2005).

The private wildlife industry itself also experiences a number of constraints that keep them from reaching full potential in terms of conservation as well as in ensuring economic gain. The major constraint is the fact that this industry is not only regulated, but overregulated by Nature Conservation and is in many ways dysfunctional (Dry, 2009).

The provincial departments of Nature Conservation currently take the lead in regulating the hunting industry (DEAT, 2005; Steenkamp *et al.*, 2005), with each province having its own regulatory system (DEAT, 2005). The wildlife industry is subject to a lot of legislation (refer to Table 2.8), which is extremely limiting. Currently the legislation, especially the permit system, is not capable of keeping up with this fast growing industry, and therefore causes problems (NAMC, 2006). Legislation in provincial departments is outdated and does not reflect the current national biodiversity conservation goal any more. Also, with species lists not being updated in all the provinces, the true conservation status of a species as well as accurate information on species populations is not available and suitable management decisions and conservation planning on a national level is therefore not possible (DEAT, 2005).

**Table 2.8: Legislation affecting the private wildlife industry in South Africa**

List of legislation
Agricultural Product Standards Act, No. 119 of 1990
Animal Health Act, No. 7 of 2000
Animal Identification Act, No. 6 of 2002
Animal Improvement Act, No. 62 of 1998
Animals Protection Act, No. 71 of 1962
Conservation of Agricultural Resources Act, No. 43 of 1983
Environment Conservation Act, No. 73 of 1989
Fencing Act, No. 31 of 1963
Firearms Control Act, No. 60 of 2000
Marketing of Agricultural Products Act, No. 47 of 1996
Meat Safety Act, No. 40 of 2000
National Environmental Management Act, No. 107 of 1998
National Environmental Management: Biodiversity Act, No. 10 of 2004
<ul style="list-style-type: none"> <li>• Hunting Norms and Standards</li> <li>• Threatened and Protected Species</li> <li>• Alien Species</li> <li>• Translocation</li> <li>• Biosprospecting</li> <li>• Environmental Impact Analysis</li> <li>• Tourism Standards</li> </ul>
National Environmental Management: Protected Areas Act, No. 57 of 2003
Perishable Products Export Control Act, No. 9 of 1983
South African Abattoir Corporation Act, No. 120 of 1992
Tourism Act, No. 72 of 1993
Veterinary and Para-veterinary Professions Act, No. 19 of 1982

Source: Dry (2009) and NAMC (2006)

The movement of species to unsuitable habitat is restricted by the Conservation of Agricultural Resources Act. Suitable habitat for different wildlife species is, however portrayed as areas where such species historically occurred in a natural state. This restriction is counterproductive, limits sustainable growth and is one of the major inhibiting factors in the wildlife industry (NAMC, 2006).

In addition to limiting legislation, there is also a lack of effective service delivery in certain provincial departments, due to a shortage of scientific and administrative competence (DEAT, 2005). Not all provincial authorities have extension officers (Steenkamp *et al.*, 2005), and those that do have, are not always able to render advice on wildlife management (DEAT, 2005). Administration within the different provincial departments also lacks consistency, which causes ineffectiveness and confusion. Different permits, for example, are required for the same species or activities in the different provinces. Additionally, an official in the one province might issue a certain permit, while an official in another province might refuse to issue the same permit (DEAT, 2005).

Another concern is that the private wildlife industry experiences unfair competition from government conservation authorities when it comes to wildlife production. During the 1980's, government conservation authorities sold surplus wildlife for a nominal price, mainly to cover capturing and transport costs. These days they perceive public wildlife auctions as a rightful method to get rid of surplus stock and national and provincial parks therefore sell surplus animals on these auctions (NAMC, 2006). According to NAMC (2006), these animals were bred and marketed with money received from tax payers, and therefore this could be perceived as unfair competition.

#### **2.1.5.4 The potential of joining forces**

It seems that a lot of conflict exists between government conservation authorities and wildlife producers. In government conservation areas, the main aim is to conserve climax communities for aesthetic and scientific reasons, while on wildlife production units the primary objective is to maintain highly productive populations, utilising it in a sustainable manner (Pollock, 1969). Although the main objectives might differ slightly, government conservation areas and private wildlife production units can coexist (Pollock, 1969), as the contribution of both towards conservation serves as common ground.

Government conservation authorities play an important role in the private industry, ensuring that wildlife producers are up to date with regulations, research findings and policy development, and able to manage their wildlife production units in a scientific and professional manner (DEAT, 2005). Wildlife producers, on the other hand, also play an important role, seeing that the present-day wildlife production units are powerful tools in conservation (Bothma, 2002). The utilisation of

wildlife is “a valuable instrument for wildlife management and is an investment in conservation for the future” (Benson, 1991). Wildlife producers put in an effort to manage wildlife production units properly and successfully in terms of conservation, to protect the huge investment they made (Bothma, 2002).

A joint approach is needed to further develop the wildlife industry, and to establish a level of trust between the different role-players (Steenkamp *et al.*, 2005). Wildlife producers should respect government conservation authorities and work in collaboration with them. Likewise, instead of concentrating on individual mishaps, government conservation authorities should rather focus on the positive contribution of wildlife production towards conservation and enable wildlife producers to be successful, without over-regulating the industry (Benson, 1991). All those involved in conservation and agriculture should be considerate of each other’s viewpoints, set aside personal and historic issues and acknowledge that a joint approach will benefit biodiversity as well as present and future generations (Nowers, 2010).

#### **2.1.6 The role of the Department of Agriculture in the wildlife industry**

The success of wildlife production is dependent on support and guidance from a number of functionaries at government level. Sustainable development of this industry depends on the ability of different government departments to work together in providing the necessary logistic and legal infrastructure (Ramsay & Musetha, 2009). The wildlife industry does not get the government support needed (NAMC, 2006), even though wildlife production is recognised as an agricultural enterprise (NAMC, 2006; Reilly *et al.*, 2003; Van der Waal & Dekker, 2000). At the moment, government support structures are fragmented and do not share a common vision (NAMC, 2006). For many years there has been uncertainty and disagreement as to where, under which department, the wildlife industry belongs (NAMC, 2006; Steenkamp *et al.*, 2005) – the Department of Environmental Affairs and Tourism, the Department of Agriculture, or both (NAMC, 2006)? At present, both these departments play a significant role in the wildlife industry, as the Department of Agriculture is involved in wildlife production (NAMC, 2006) and provides a development infrastructure, while the Department of Environmental Affairs and Tourism provides the necessary frameworks to regulate activities such as ecotourism and hunting (Ramsay & Musetha, 2009).

Many wildlife producers strive to reside under The Department of Agriculture and argue that it is unreasonable to expect that conservation benefits should be generated on their land, when the same does not apply to livestock farmers (Steenkamp *et al.*, 2005) – especially if it is taken into consideration that wildlife contributes to conservation through the utilisation of vegetation in a better, less destructive manner (NAMC, 2006). Over-grazing and bush encroachment can therefore be largely reduced through this use of land (NAMC, 2006).



Bothma (2005) suggested that a distinction should be made between intensive and extensive wildlife production. Intensive wildlife production can continue as an agricultural enterprise, even producing exotic species, but limited to the same health restrictions as livestock, whereas extensive wildlife production has implications for biodiversity conservation through the production of indigenous wildlife on natural habitat. Intensive wildlife production should be an enterprise on its own, with its own set of guidelines and values (Bothma, 2005).

In the early twentieth century, the Department of Agriculture was tasked with the responsibility of protecting the country's agricultural sector. For the largest part of that century, the Department did not fully succeed in its role, as it held back the growth of the wildlife industry. The attitude towards wildlife production, even in the second half of the century, was hesitant not only because of real fears such as diseases and veld management, but also because of a reluctance to change traditional operations and an adherence to research agendas that were formulated decades prior. With the start of the game meat market, the Department of Agriculture was also reluctant to support this industry, as game meat was seen as a low quality meat and, therefore, investment into research to grow the industry would not be worth the effort (Carruthers, 2008a).

The Department of Agriculture is under increasing pressure from wildlife producers to get involved in the wildlife industry through research, training, extension, legislation, development and management. Dedicated personnel such as economists, veterinarians, engineers and animal scientists, already within the Department, should be appointed and allocated the funds to support wildlife producers with their needs (Nowers, 2010).

A mind shift is necessary when it comes to this agricultural enterprise with its more balanced land utilisation. This will aid in the setting aside of historical and personal issues which can be restraining (Nowers, 2010). Recently, the Department of Agriculture took initiative in developing a wildlife production policy and, in an effort to move towards an integrated one-stop service for this sector, links have been established with key Departments (Ramsay & Musetha, 2009). The time has come for the Department of Agriculture to step up and take ownership in assisting this growing industry to reach its full potential (Nowers, 2010).

## **2.2 THE WESTERN CAPE WILDLIFE INDUSTRY**

The Western Cape has a rich and unique biodiversity. The Cape Floristic Region, which falls mostly within the Western Cape Province, is one of the world's six floral kingdoms (Boshoff & Kerley, 2001; Van Deventer, 2010). It is also one of the two internationally acknowledged "Biodiversity Hotspots" (Boshoff & Kerley, 2001; Van Deventer, 2010) in the world. These

“hotspots” have high concentrations of endemic species, but also experience major habitat loss (Giliomee, 2006).

Even though it was not traditionally regarded as a wildlife production area, there is a current trend away from traditional livestock and crop farming towards a nature-based land-use practice in the Cape Floristic Region as well as most of the remaining parts of the Western Cape Province and the whole of South Africa. This nature-based land-use practice makes use of the country’s magnificent biodiversity, in particular the wildlife, mostly through the hunting, game meat and ecotourism markets (Kerley *et al.*, 2003).

### **2.2.1 Historic and current distribution of wildlife species**

It seems that the Cape Province, today subdivided into the Northern, Western and Eastern Cape Provinces, was the first region where wildlife numbers were depleted as it is stated by Pollock (1969) that wildlife was still plentiful during the nineteenth century in the largest part of Africa, with the exception of the Cape Province.

Boshoff (2001) drew up maps for wildlife species distribution in the Cape Floristic Region and supplied a summary of the historic and present occurrence of these species. A lot of the species’ present occurrence does not differ much from their historic distribution. A few species are totally extinct though, and some are only extinct in regards with aboriginal free-roaming populations; meaning that there are no original free-roaming populations left in the areas they historically occurred.

Wildlife species whose present occurrence is the same as their historic distribution, although densities or numbers might have declined, are vervet monkey *Cercopithecus aethiops*, cape porcupine *Hystrix africaeaustralis*, bush pig *Potamochoerus porcus*, common duiker *Sylvicapra grimmia*, klipspringer *Oreotragus oreotragus*, steenbok *Raphicerus campestris*, Cape grysbok *Raphicerus melanotis* and bontebok. The bontebok is one of the least common large antelope species in the whole of southern Africa. Although the range of kudu might have changed, it seems not significantly different. Recent sightings of kudu were reported westwards and northwards into the Cape Floristic Region. The occurrence of kudu in these areas could be temporary (Boshoff & Kerley, 2001).

Species that are still widely spread throughout the Cape Floristic Region, although some species might have undergone local declines or local extinctions, are chacma baboon *Papio ursinus*, leopard, caracal *Caracal caracal*, African wild cat *Felis lybica*, bat-eared fox *Otocyon megalotis*, cape fox *Vulpes chama*, black-backed jackal *Canis mesomelas*, honey badger *Mellivora capensis*,

aardvark *Orycteropus afer* and grey rhebok *Pelea capreolus*. Bushbuck *Tragelaphus scriptus* occurs patchily, its numbers have declined and there might have been local extinctions (Boshoff & Kerley, 2001).

Some species, such as warthog, springbok, oribi *Ourebia ourebi*, mountain reedbuck and gemsbok, only occurred in few areas of the Cape Floristic Region and, if not already reintroduced, are candidates for reintroduction (Boshoff & Kerley, 2001).

Red hartebeest, of which thousands occurred east of Riebeek-Kasteel, black rhinoceros, abundant in the Tulbagh area, and the African buffalo, which occurred east and north-east of the Buffeljagsriver near Swellendam (Claassen, 1999), are species that are extinct as free-roaming species in the Cape Floristic Region (Boshoff & Kerley, 2001). They now only occur in formal conservation areas as well as private wildlife production units, while the eland, that was previously a common and widespread free-roaming species, mostly occurs in reintroduced populations (Boshoff & Kerley, 2001).

Elephant previously occurred in the surrounding areas of Cape Town, Piketberg, Mossel Bay, the Karoo (Boshoff & Kerley, 2001) and on the river banks of the Olifantsriver (Claassen, 1999). The elephants on Piketberg were exterminated before the end of the eighteenth century. Only a small number of aboriginal individuals still roam in the Knysna forest area and the free-roaming elephant is virtually extinct (Boshoff & Kerley, 2001).

Although a number of reintroductions took place in formal conservation areas and private wildlife production units, only two aboriginal populations of the Cape mountain zebra, (that once roamed the mountain slopes in large numbers) are left (Claassen, 1999). None of the aboriginal populations of the Burchell's zebra *Equus burchelli* are left (Boshoff & Kerley, 2001).

Cheetah, are extinct as free-roaming species, but can be re-established in suitable areas. Both lion and wild dog *Lycaon pictus* once were fairly widespread and occurred in large parts of the Cape Floristic Region, but are now extinct as free-roaming species in the region. Lion became extinct in the region by the early nineteenth century. Other species considered extinct in the Cape Floristic Region are the brown hyaena *Hyaena brunnea*, since there is no evidence of an existing breeding population, the spotted hyaena *Crocuta crocuta* and the serval *Felis serval* (Boshoff & Kerley, 2001).

The two species that are totally extinct are the quagga and the bloubok (Boshoff & Kerley, 2001). The quagga once were typical in the Karoo but also occurred in the Overberg and Swartland areas of the Western Cape Province (Claassen, 1999). The last quagga died in 1883 in a zoo in Europe.

The bloubok was endemic to the Cape Floristic Region and although it was previously common on the southern side of the Cape Folded Mountains (Boshoff & Kerley, 2001), it was later on confined to the same area as bontebok today; the Overberg District of the Western Cape Province (Boshoff & Kerley, 2001; Claassen, 1999). The last records of the bloubok dated from between 1799 and 1800 (Boshoff & Kerley, 2001).

## **2.2.2 Previous and current status of the Western Cape wildlife industry**

The wildlife industry in the Western Cape Province, until recently, was somewhat overlooked by the total wildlife industry in South Africa. Hunters and wildlife producers that wanted to accomplish something, had to take their own initiative (Jonker, 2003).

Wildlife production, traditionally on livestock farms, was seen as a bonus and not a main source of income, and therefore hunting was allowed on these farms for only a short period during winter months. The focus was more on harvesting than on the experience of the hunter, which resulted in hunters being satisfied with low standards. The development of trophy hunting, because of the traditional lack of opportunities and species, was slow in comparison to other provinces. With the lack of awareness of trophy standards as well as the lack in dollars from the overseas hunter, the trophy hunting industry was limited to a few ambitious individuals (Jonker, 2003).

A new era commenced together with the revolution in the wildlife industry elsewhere, and some factors played a meaningful role in this turnaround. Higher costs and more complicated requirements at the Namibian border post resulted in Western Cape hunters preferring closer hunting destinations. New legislation on fire arms drove hunters to join hunting organisations, where they were exposed to new values, challenges and knowledge. A lot of publications also ensured an increase in awareness and insight for hunters and wildlife producers (Jonker, 2003).

During the same time, the Western Cape Province became a highly preferred tourist destination, which brought the international tourist and hunter within reach of the wildlife producer. Even South African hunters from elsewhere started considering a hunt in areas such as the Karoo. Better conservation principles as well as the new generation of wildlife producers who are in favour of conservation, contributed towards a positive change in the condition of natural areas. At this stage, kudu was again seen in the Karoo where it previously occurred and an increase in small antelope and birds around Western Cape farms was noticeable (Jonker, 2003).

Apart from Gauteng Province, the Western Cape Province was indicated as the province with the smallest number of wildlife production units during 2001. Only 82 (refer to Table 2.9) wildlife production units existed in this province, which represented only 1.62% of wildlife production units

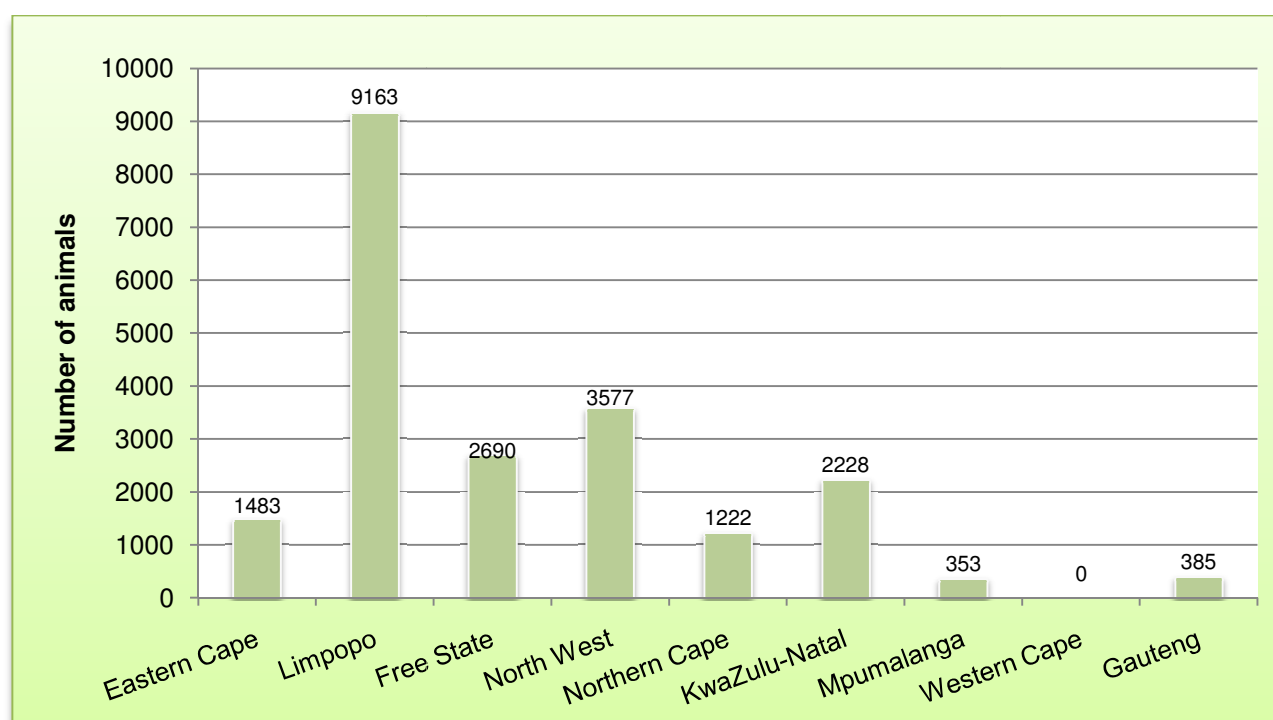
in the country. These wildlife production units covered an area of 265 205 ha, which represented 2.56% of the total area under wildlife production (DEAT, 2005; Steenkamp *et al.*, 2005). In the Northern Cape and Western Cape Provinces, the mean size of wildlife production units is noticeably larger than in the rest of the provinces. This is mainly due to the lower ecological capacity in arid environments (DEAT, 2005).

**Table 2.9: Status of wildlife production units in different provinces of South Africa in 2001**

Province	Number of wildlife production units	Percentage of total wildlife production units (%)	Area (ha)	Percentage of total area (%)	Average size of wildlife production units (ha)
Free State	180	3.56	147 743	1.43	821
Limpopo	2 482	49.04	3 325 652	32.09	1 340
North West	340	6.72	364 935	3.52	1 073
Mpumalanga	205	4.05	276 016	2.66	1 346
Gauteng	72	1.42	82 076	0.79	1 140
KwaZulu-Natal	90	1.78	168 841	1.63	1 876
Eastern Cape	624	12.33	881 633	8.51	1 413
Northern Cape	986	19.48	4 852 053	46.82	4 921
Western Cape	82	1.62	265 205	2.56	3 234
<b>Total</b>	<b>5 061</b>	<b>100.00</b>	<b>10 364 154</b>	<b>100.00</b>	<b>2 047</b>

Source: DEAT (2005) and Steenkamp *et al.* (2005)

During 2004 no wildlife (refer to Figure 2.1) were sold at auctions in the Western Cape Province (Steenkamp *et al.*, 2005), due to the lack of wildlife auctions in this province.



Source: Steenkamp *et al.* (2005)

**Figure 2.1: Wildlife sold on auctions in different provinces of South Africa during 2004**

The Western Cape Province also appears to be the least preferred province to hunt in (Carruthers, 2008a).

Professional hunters in the Western Cape Province had 26 hunting clients (refer to Table 2.10), who hunted a total of 108 animals. This results in an average of 4.15 animals hunted per hunter (Steenkamp *et al.*, 2005).

**Table 2.10: Professional hunting statistics for the 2003/2004 hunting season in South Africa**

Province	Number of hunters	Total wildlife hunted	Wildlife per hunter	Total hunting days
Western Cape	26	108	4.15	120
Eastern Cape	2 002	16 102	8.04	41 765
Northern Cape	737	4 852	6.58	5 699
Free State	930	5 733	6.16	5 540
Kwazulu-Natal	703	3 754	5.34	4 818
North West	815	4 339	5.32	5 257
Gauteng	119	434	3.65	380
Limpopo	1 127	17 815	15.81	8 704
Mpumalanga	214	748	3.50	1 655
<b>Total</b>	<b>6 673</b>	<b>53 885</b>	<b>8.08</b>	<b>73 938</b>

Source: Steenkamp *et al.* (2005)

Despite this, the potential for generating an income from wildlife production did not go unnoticed, and the number of wildlife production units as well as trophy and biltong hunting opportunities is increasing (Jonker, 2003).

Although the Western Cape Province does not have the same rich diversity as the Bushveld, there are enough species to choose from. Species that are popular trophies in this province are the endemic Cape grysbok and bontebok. Other species of trophy value are the grey rhebuck *Pelea capreolus*, springbok, gemsbok and red hartebeest (Jonker, 2003).

Although the Western Cape wildlife industry has not yet caught up with that of the rest of the country, the recent growth in the Eastern and Western Cape Provinces has been comparatively more rapid (Bothma, 2004), and the Western Cape Province in particular has experienced a tourism surge (Hoffman *et al.*, 2003).

### 2.2.3 The Western Cape wildlife industry and conservation

The Cape Floristic Region, covering a total area of 90 000 km<sup>2</sup>, is not only very rich in biodiversity and endemism, but also contains soil with a high potential for agricultural productivity. Over past centuries, the region lost 26% of its natural vegetation due to its transformation into agricultural production land. The remaining part of the region is mostly represented by rocky and mountainous areas, which are unsuitable for agriculture. This means that in most of the grassy lowland areas biodiversity is lost due to agricultural activities. This loss in vegetation has played a considerable role in the depletion of animal life, especially the larger mammals (Giliomee, 2006).

It is advisable that a substantial portion of the lowlands, which is still in its natural state, will be brought under some sort of conservation management, allowing where necessary, the reintroduction of these regionally extinct mammal populations (Kerley *et al.*, 2003). The majority of this land is under private ownership (Kerley *et al.*, 2003) and has a high potential for agriculture (Giliomee, 2006). To prevent this land from being transformed into agricultural production land, and to get it under conservation management, private land owners should be involved in government conservation strategies (Giliomee, 2006; Kerley *et al.*, 2003; Van Deventer, 2010).

When incentivised to conserve the natural vegetation on their land, land owners will be more willing to take part in conservation. A financial incentive, which involves the exemption of land rates on properly managed privately owned land, that has been declared a protected area, has already been introduced (Giliomee, 2006). The presence of indigenous wildlife on private land can also play a significant role in encouraging private land owners to participate and find commercial interests in conservation. The lack of recognition of the remarkable wildlife that occurred historically in the Cape Floristic Region, as well as the lack of information on possibilities for management of wildlife in this area today, is largely the reason why the Cape Floristic Region has not been party to the booming wildlife industry in South Africa (Kerley *et al.*, 2003).

This region is usually associated with economic benefits from agriculture or plant-based ecotourism, but not wildlife management (Kerley *et al.*, 2003). Kerley's (2003) proposed mammal conservation strategy, producing information on the potential distributions of wildlife (Boshoff & Kerley, 2001), has the potential to stimulate interest in and expand the wildlife industry in this region (Kerley *et al.*, 2003). The wildlife industry, if properly managed, can potentially contribute extensively to the biodiversity conservation of the Cape Floristic region (Kerley *et al.*, 2003).

Wildlife producers, however, experience difficulties in managing their wildlife production units, because of some limitations regarding the regulation of the wildlife industry. In order to ensure environmental protection for future generations, it is required, by the Constitution of the Republic of

South Africa, that rational legislative processes must be established. The government conservation authority in the Western Cape Province that is responsible for implementing the regulations is CapeNature, a public institution governed by the Western Cape Nature Conservation Board (Van Deventer, 2010).

Regulating the translocation of wildlife within the Western Cape Province is one of CapeNature's key responsibilities. Currently only species that historically occurred in a certain area may be transferred to that area on condition that it will not have a negative influence on other plant or animal species in the new environment. Furthermore, only animals that originate from genetically suitable populations, providing it will not be of threat to the genetic integrity of any other species, are allowed to be transferred. Translocated species also may not displace the species that occur naturally in an environment (Van Deventer, 2010).

This policy causes difficulties for wildlife producers. The list of species allowed in the Western Cape Province is limited, the issuing of permits takes too long, wildlife producers are not allowed to intensively produce rare and valuable species, and species that are present on one wildlife production unit are often not allowed on the neighbouring unit. With these difficulties the Western Cape Province wildlife producers cannot compete with wildlife producers in other provinces. Wildlife producers want all indigenous species in South Africa to be allowed on wildlife production units, and the list of species to be adjusted accordingly (CapeNature, 2010).

A forum that includes wildlife producers, leaders in the wildlife industry and officials from CapeNature and The Department of Agriculture, has been established and it was agreed that a trust relationship is necessary between CapeNature and the wildlife industry (CapeNature, 2010) to overcome all obstacles and work together to promote the wildlife industry and therefore also conservation.

## **2.2.4 Wildlife production systems in the Western Cape Province**

No literature on the characteristics of wildlife production units in the Western Cape currently exists. The status of wildlife production units, as well as the feasibility of different wildlife production systems within the province, is unknown. The results and discussions from data collected in this study reveal much of this information in the chapters to follow.



## **CHAPTER 3**

### **METHODOLOGY**

This chapter provides a brief overview of the study area and describes the methods followed to address the problem statement in order to achieve the desired results.

#### **3.1 STUDY AREA**

The Western Cape Province of South Africa is a unique province with respect to species richness and endemism. The province houses five of the nine vegetation biomes in South Africa. The Fynbos biome (known for its winter rainfall) and Succulent Karoo biome (with its drier climate) form part of the six floristic kingdoms in the world, and cover most of the province. The Nama-Karoo biome, a summer rainfall area, also covers a large area, while the Albany Thicket and Forest biomes only cover a small part of the province (Rutherford *et al.*, 2006). Some 300 years ago, the province had a lot of wildlife, including the “big five”, roaming the area, but with the competition that came after the European settlement, together with land transformation, many of those species are now regionally extinct in the Western Cape Province (Kerley *et al.*, 2003).

The province is administrated by six district municipalities, namely the Cape Metropole, Cape Winelands, West Coast, Central Karoo, Eden and Overberg Districts and several local municipalities exist within each district.

#### **3.2 METHODOLOGY**

The method, on which this study was based, is described below by means of addressing each sub-problem on its own.

##### **3.2.1 Description of current wildlife production systems in the Western Cape**

In order to explore the manner in which wildlife production systems are currently operated in the Western Cape, a sound foundation of data and information regarding wildlife producers and wildlife production units were needed to act as a starting point for deeper analysis. With the exception of a few, sometimes out-dated, address lists of wildlife producers, no information was available on the current practices of wildlife production units in the Western Cape. The lack of baseline information on the wildlife industry in the Western Cape necessitated the gathering of this information as part of this study. This information was gathered by means of a questionnaire.

### **3.2.1.1 *Assembling the address list***

In order to get as much information as possible, questionnaires would ideally be sent to all wildlife producers in the Western Cape. A complete contact list for wildlife production units in the Western Cape did not exist and an address list of wildlife producers, from various sources, had to be compiled for this purpose. Role-players, such as government conservation authorities and wildlife producer's associations, were contacted to identify and collect as many names and addresses of wildlife producers in the Western Cape as possible. Lists acquired included lists of wildlife production units in possession of certificates of adequate enclosure, member lists of wildlife producer's associations, separate attendance lists of a wildlife information day and a wildlife forum meeting as well as a list of wildlife production units assembled from printed marketing material and road-side sign posts by officials of the Department of Agriculture.

The names and addresses on some of these lists ensured only a possible interest in the wildlife industry and did not necessarily mean that the person was an owner or manager of a wildlife production unit. Duplication also occurred for the reason that at the wildlife information day there was more than one representative for some wildlife production units. There were also names included on the lists of people who were not representative of any wildlife production unit. All these lists were combined into one database and since there was a lot of overlapping information from the different lists, all duplications had to be filtered out in so far as was possible.

Since provincial borders are artificial and natural boundaries according to habitat and vegetation are better to use, it was decided to include two wildlife production units (which were on the combined database) that fell outside of the political boundaries of the Western Cape Province. These units are situated near Sutherland and Aberdeen in the Northern Cape and Eastern Cape Provinces respectively.

### **3.2.1.2 *The questionnaire***

A short questionnaire, consisting of one page printed on both sides (refer to Appendix 1), as well as a cover letter was drawn up in both Afrikaans and English. This was designed to extract valuable information regarding the extent and structures of the wildlife industry. Information included management aspects, such as the type of wildlife production system, the number of employment opportunities provided, the different ways in which wildlife is marketed and the variety of activities on these units. Infrastructural aspects such as water sources, type of fences and fixed improvements as well as demographic aspects such as the location of wildlife production units and names and contact details of wildlife producers were also addressed.

Accompanied by a stamped envelope, the questionnaire was then posted to all of the addresses that had been collected. A few questionnaires were electronically mailed to potential wildlife producers for whom no postal address was available. Personal information obtained from participants was promised to be kept confidential.

A total of 369 questionnaires were sent out to people who are involved or have an interest in the wildlife industry. Where information indicated that a certain person owns more than one title deed, a separate questionnaire was sent out for each property. This was not effective since most of the wildlife production units were indeed situated on more than one title deed and in most of these cases only one completed questionnaire was returned. Also, with the return of the questionnaires more duplication of addressees involved in the same wildlife production unit was discovered. Due to the above mentioned factors the number of questionnaires that were effectively sent out covered 333 wildlife production units.

An effort was made to contact individuals who did not respond to the questionnaires in the given time-frame and to encourage them to complete it and send it back. A total of 110 questionnaires were received back; a 33% response rate.

### **3.2.1.3 *The data***

Data collected from questionnaires included the type of farming, the total area and the area allocated to wildlife on this unit. Also, the year in which wildlife production was started on this unit, the number of permanent and temporary jobs allocated to wildlife and wildlife related practices were investigated. The names and contact details of neighbouring wildlife production units, income sources from wildlife production, nutrition sources, water sources, fences and infrastructure were also included. Wildlife producers' perception on the importance of wildlife research, their willingness to participate in further research as well as their viewpoint on the greatest opportunities and major threats in wildlife production were tested. The existence and numbers of wildlife species as well as demographic aspects such as the name and location of the wildlife production unit, the name and contact details of the owner and the level of involvement and occupation of the owner were also included.

All data collected from questionnaires was captured into an Excel spreadsheet and prepared for statistical analyses. Where two questionnaires were received for the same wildlife production unit, the information was merged into one. The data on questionnaires that were received from wildlife related businesses (for example wildlife consultants or abattoirs), which are not wildlife production

units, as well as those from government conservation areas (such as provincial parks), were removed. The study therefore focuses on private wildlife production only.

Statistical analysis were done using STATISTICA 7, StatSoft Inc. (2004) STATISTICA (data analysis software system), version 7; [www.statsoft.com](http://www.statsoft.com). Summary statistics were used to describe the characteristics of the current wildlife production systems in the Western Cape as a whole, as well as in the separate districts of the Western Cape Province. Distributions of variables were presented with histograms and or frequency tables.

### **3.2.2 Identification of typical wildlife production systems**

The identification of wildlife production systems, typical to an area, was not an easy task. A series of statistical analyses were done and different methods were considered and attempted for this identification. The plan was to identify the typical wildlife production system(s) in different areas through statistical analyses, using the data collected from the questionnaires. After the identification of the typical wildlife production system(s), discussion group sessions would be facilitated and wildlife producers, falling under the umbrella of a certain typical system in a specified region, were to be invited to these sessions.

#### **3.2.2.1 Initial statistic analyses**

Firstly, analysis of variance (ANOVA) was done with the dependent variable being the type of farming, against the respective independent variables; area allocated to wildlife, total area of the unit, number of farming years and permanent and temporary jobs allocated.

Categorical data was described and presented using contingency tables and histograms for the type of farming. Live sales, game drives, biltong hunting, trophy hunting, hunting for own use, game meat, commercial harvest, inside fencing as well as sources of income, such as ecotourism were described. Basic statistics were also used to describe nutrition, type of fencing, wildlife species, district municipalities, and whether the wildlife producer for each type of farming worked full or part-time.

Following this, the same summary statistics were used to describe the area allocated to wildlife.

Stepwise logistic regression was done on different wildlife species, but no relevant conclusion could be drawn from this.

Unfortunately, no relationship could be established that would identify certain wildlife production units to be typical of each other. This is mainly because of the huge diversity within wildlife production. Every wildlife producer does his own thing, and not even two wildlife production units are exactly the same. It is important that the wildlife production units should be typical to certain regions so as to be able to do further data collection by organising discussion groups in each area.

An average farming system is not necessarily a typical farming system; in fact it is very seldom a typical farming system (Meiring, 1994). A typical farm could be described as a farm that represents similar activities taking place on a group of farms (Botha, 2006). There are three steps to determine typical farming systems. The first step is to identify relevant farming types and production regions; the second is to identify farming characteristics such as size, crop combinations as well as livestock enterprises and lastly, the development of enterprise budgets, modifying it into a whole farm approach (Meiring, 1994). Although these criteria were established for agricultural production systems, it was taken into consideration in the attempt to identify typical wildlife production units.

### ***3.2.2.2 Identification of farming types and production regions***

Further investigation was done to identify typical wildlife production units. The response rate of each of the six district municipalities was calculated as a percentage. The Central Karoo, Eden, Cape Winelands and West Coast District Municipalities had response rates of respectively 28%, 27%, 19% and 14%. The Overberg and Cape Metropole District Municipalities had dismal response rates (5% each) and these two districts were therefore excluded.

Sixty nine percent of the respondents from the Central Karoo indicated the type of farming as wildlife in combination with commercial livestock, whereas 64% of the Eden respondents indicated the type of farming as wildlife only. The majority of both the respondents from Cape Winelands (53%) and West Coast Districts (50%) indicated the type of farming as wildlife in combination with other agricultural practices. This seemed like a step closer to the identification of typical wildlife production systems. However, it did not necessarily mean that the same characteristics were to be found on wildlife production units that indicated the same type of farming. The frequency of the different characteristics in each municipal district was therefore investigated.

Although some characteristics were more frequent in certain districts, many occurred in more than one district. Biltong hunting seemed to be prominent in the Central Karoo, but trophy hunting, although less frequent, was also present. In the Eden District, accommodation is available on most of the wildlife production units, while ecotourism, live sales as well as trophy hunting also play important roles. Ecotourism and accommodation is frequent in the Cape Winelands District,

whereas accommodation and “game drives” feature in the West Coast District Municipality. Statistical analyses were done in this regard, to find some relationships in the different district municipalities. A cluster analysis was performed. Basic statistics (frequency tables and histograms) were used to describe biltong hunting, trophy hunting, food sources, water sources, infrastructure, ecotourism, activities, live sales, hunting for own use, game meat, type of farming and wildlife species in each district. This analysis failed to identify typical systems in district municipalities.

Next natural boundaries were considered, namely the vegetation biomes of the Western Cape. This, however, would not be worthwhile since most of the Western Cape is covered by one biome (the Fynbos biome). Smaller areas within the Western Cape are further covered by the Succulent Karoo biome, the Nama-Karoo biome and also the Albany Thicket and Forest biomes. Identifying a typical wildlife production system in each biome would result in a logistical nightmare. The large distances between wildlife production units would make it impossible to get all relevant wildlife producers at the same place for a meeting.

The next attempt was to look into bioregions. Each vegetation biome is divided into a number of bioregions. This again could not be a solution since there are too many bioregions and they are far too diverse.

After all these attempts (including various investigations of the data), it was finally decided to select the areas with the largest response rate, where the wildlife production units are not too far apart. The activities on these units were subsequently analysed to determine if they were typical of the area. The four areas with the highest response rate included the areas surrounding Beaufort West in the Central Karoo District; the Southern Cape in the Eden District (on the southern side of the mountain); Ceres in the Cape Winelands District and the areas surrounding Barrydale in the Overberg District. However, in the Barrydale group, it became obvious that no similarity, except for certain wildlife species, was to be found and it was therefore eliminated from further analyses. The Beaufort West, Southern Cape and Ceres areas were then used for further analyses on typical wildlife production units in these areas.

### ***3.2.2.3 Typical wildlife production systems***

A total of 18 wildlife production units are situated in the region of Beaufort West. In the Southern Cape, 14 wildlife production units are situated in the area surrounding the towns of Mossel Bay, Hartenbos, Albertinia, Gouritzmond, George and Sedgefield, whereas five wildlife production units are in close proximity to Ceres.

It seemed that biltong hunting is the characteristic most prominent to the Beaufort West area, with seven (39%) wildlife production units that facilitate biltong hunting. Five other wildlife production units (28%) also facilitate biltong hunting, but in combination with trophy hunting. In the Southern Cape area, trophy hunting seemed to be the activity that is the most prominent in the region, with six (43%) wildlife production units supporting trophy hunting. In the Ceres area, ecotourism features, with four out of five (80%) wildlife production units supporting ecotourism and five out of five wildlife production units providing accommodation, which could be seen as a part of ecotourism.

A stepwise logistic regression was done for these three areas. Again, the test did not indicate typical wildlife production units within these areas.

Therefore, biltong hunting, trophy hunting and ecotourism, in the three mentioned areas, were used as the typical wildlife production systems.

### **3.2.3 Dimensions and criteria for evaluation**

A business evaluation enables managers to undertake strategic planning (Mampane, 2004). When evaluating a farm business, a distinction should be drawn between a financial analysis, a diagnostic analysis and a financial sustainability analysis (Van Zyl *et al.*, 1999). The financial analysis determines the growth, strength and financial position of a farm business and in this study the identified typical wildlife production systems are going to be described within a whole farm approach, by using some performance measures such as absolute measures and financial ratios. The diagnostic analysis addresses the factors that are responsible for the efficiency levels in the different enterprises and special attention will be given to some employment aspects. The financial sustainability analysis will address the sources and utilisation of funds. All of the abovementioned factors will be described for each typical wildlife production system. Lastly, comparisons will be drawn between the profitability of wildlife production systems described in the literature and the typical wildlife production systems of this study.

#### **3.2.3.1 Financial analysis**

For each typical wildlife production system, the gross value of production, gross margin, net farm income as well as financial ratios such as farm profitability, return on own capital, net capital ratio, leverage ratio, own capital ratio, cost ratio, capital turnover ratio and the debt servicing ratio were calculated.

The gross value of production is the total value of marketable products for an enterprise and is calculated by adding gross sales, insurance received on losses, household and labour consumption, donations, internal transfers and stock adjustments. The gross margin is the remaining part of the gross value of production after the directly allocatable variable costs for the given enterprise were deducted. The directly allocatable variable costs are costs that can be allocated directly to a certain enterprise on a farm and can include purchases of seed or feed and supplements, contract work, packing material, marketing costs, hired transport and insurance. Gross margin is used to compare different enterprises to each other. The net farm income is the remaining part of the total farm gross margin after the overhead costs have been deducted. The total farm gross margin is the sum of the gross margins of all the enterprises on a farm as well as sundry farm income. The overhead costs are all costs that cannot be allocated to a certain enterprise, and include non-directly allocatable variable costs such as fuel, oil and lubricants, repairs and spares, and fixed costs, such as depreciation, insurance on fixed improvements, vehicles and machinery, licenses, regular labour, bookkeeping fees and telephone costs. Net farm income is used to compare different farm businesses to each other, especially when it is expressed per large stock unit, per capital investment or per size of land (Department of Agriculture, 2005; Van Zyl *et al.*, 1999).

The financial performance of a farm business can be measured by a series of ratios, namely profitability, solvency, liquidity and efficiency ratios. These ratios should be meaningful and should be compared to each other, as they will not reflect the true situation when studied in isolation (Van Zyl *et al.*, 1999).

Profitability is the percentage relationship between profit made during a certain time period and the capital invested in order to realise that profit. It therefore indicates the profitability of the farm business and represents the interest earned on capital for a certain period, which can be compared to interest earned on other investment opportunities. One way of measuring profitability is to calculate the farm profitability, by expressing the net farm income as a percentage of the total capital invested. Farm profitability is a valuable tool to compare farms with each other, no matter whether the land is owned or rented or whether the farm is managed by the owner or an appointed manager. Return on own capital is another way of measuring profitability and is calculated by expressing the net farm income (after deduction of cost of own and hired management as well as interest on borrowed capital) as a percentage of own capital or net worth. This ratio is an indication of the interest earned on own capital, after borrowed capital has been serviced (Van Zyl *et al.*, 1999).



Solvency indicates the level at which the assets of a business cover its liabilities and therefore the ability to meet its responsibilities after a possible termination of operations. The net capital ratio (total assets : total liabilities) indicates whether outstanding debt will be covered after all assets have been sold. The leverage ratio (total liabilities : own capital) indicates the farmer's ability to cover total debt from own capital and the own capital ratio points out the relationship between own contribution and total assets of the farm business (Van Zyl *et al.*, 1999).

Liquidity gives an indication of the ability of a farm business to timeously meet all current liabilities that are crucial for the future existence of the business and to acquire the means to utilise possible opportunities for profit-making or expansion. Current liabilities such as interest and production costs should be met without distressing farming activities because of insufficient funds. Liquidity ratios are static and reflect the situation at a certain point in time, whereas the cash-flow position of a business could change drastically at any time and is therefore dynamic. The current ratio (current assets : current liabilities) indicates the level at which cash and the sale of current assets can redeem current liabilities. The acid test ratio (current assets minus stocks and supplies : current liabilities) measures the immediate liquidity by excluding those items that cannot immediately be converted to cash. The intermediate ratio (total current assets plus medium-term assets : total current liabilities plus medium-term liabilities) is a way to calculate liquidity in the medium term (Van Zyl *et al.*, 1999).

The purpose of calculating efficiency ratios is to determine the extent to which resources are efficiently used. One such ratio is the capital turnover ratio (gross value of production : total capital employed), which indicates the efficiency of the use of capital in the farm business. The total cost ratio (total costs : gross value of production) show the portion of the gross value of production that is spend on costs (Van Zyl *et al.*, 1999).

The debt servicing ratio (debt redemption : gross value of production) measures the extent to which the business can meet its debt responsibilities (Van Zyl *et al.*, 1999).

### **3.2.3.2 Diagnostic analysis**

The financial analysis gives a good indication of the financial performance of the farm business. However, it does not give an indication of why and how a certain result was reached. A diagnostic analysis was therefore necessary to determine the basis for the specific situation. In the diagnostic analysis, three different criteria are addressed, namely enterprise criteria, general criteria and investment criteria (Van Zyl *et al.*, 1999) and attention will be given to the utilisation of labour.

Enterprise criteria include the number of large stock units, converted from animal numbers, by using the tables as presented by Meissner (1982). A large stock unit is defined as “the equivalent of a steer with a mass of 450 kg and mass gain of 500 g per day on grass pasture with a mean digestible energy concentration of 55%”. Conversion was done for livestock as well as wildlife species and the number of large stock units for the whole farm was calculated by adding the converted livestock numbers to the converted wildlife numbers. The enterprise criteria also included some productivity ratios, such as the natality (calving or lambing percentage), weaning percentage and mortality rate for each enterprise. The number of hectares grazing land per large stock unit was also calculated.

Under general criteria, the gross value of production, gross margin and sundry income for the whole farm as well as the wildlife enterprise were compared and will be discussed in Chapter 5. Sundry income is mainly generated from accommodation fees and daily fees. In the typical biltong hunting system, accommodation is mainly available to biltong hunters during hunting expeditions. In the trophy hunting system, accommodation is available to tourists also and not only to the few trophy hunters. Allocation of sundry income to the different wildlife enterprises of the typical biltong hunting system is therefore based on the number of hunters that hunted the different wildlife species. The sundry income allocation of the typical trophy hunting system is evenly spread between the species, as none of the wildlife species in this system carries a heavier weight in attracting tourists.

The basic gross margin (which excludes sundry income), sundry income and gross margin (after sundry income was allocated and added to the basic gross margin) were also expressed per hectare, per large stock unit, per breeding female and per animal marketed. Net farm income was expressed per hectare and per large stock unit. Overhead cost per large stock unit was also compared within the identified typical wildlife production systems.

Under investment criteria, the land value per hectare, value of fixed improvements per hectare, value of wildlife per hectare, the capital investment in moveable assets, capital investment per large stock unit and the capital investment in wildlife per large stock unit were investigated.

Special attention was given to employment aspects, such as the number of employees, different positions, and remuneration. The initial and current education (highest qualification) levels as well as the initial and current skills level of employees were investigated for each identified typical wildlife production system. Furthermore, labour cost per permanent worker per month, gross value of production per worker, gross value of production per R100 labour cost and net farm income per R100 labour cost were calculated and compared between the identified typical wildlife production systems.

### **3.2.3.3 Financial sustainability analysis**

In the financial sustainability analysis, the ratio of debt to net farm income, debt per hectare as well as debt per large stock unit, were calculated for the whole farm.

### **3.2.3.4 Comparisons with wildlife production systems described in the literature**

The profitability of wildlife production systems elsewhere in the country, as described by ABSA (2003), is discussed in the literature review. In order to compare the profitability of those systems to the typical wildlife production systems in this study, additional calculations had to be made for the typical systems. Furthermore, these calculations had to adapt to the manner in which calculations were done by ABSA (2003). Although the terminology used by ABSA (2003) is questionable and might not be recognised agricultural economic terms, it was decided to stick with this terminology (but supply sufficient explanations as to what the terms refer to and how it was calculated) for the important purpose of comparison.

ABSA (2003) measures profitability in two supplementary ways: the “net operating margin”, which ignores the cost of capital employed and the “return on capital invested”, which takes into consideration the capital outlay. In order to compare the systems, the same ratios were calculated for the typical wildlife production systems in this study. The typical biltong hunting system however, not only has a wildlife enterprise, but also has a crop and livestock enterprise. Wildlife production systems described in the literature do not have any enterprises other than the wildlife enterprise. In order to compare wildlife with only wildlife, the above mentioned ratios were also calculated for the wildlife enterprise only of the typical biltong hunting system.

The “net operating margin”, is calculated by ABSA (2003) by expressing the “net operating profit” as a percentage of the “gross operating income”. The “gross operating income” relates to the correct agricultural economic term, “gross margin” as the directly allocatable variable costs are already deducted. The “net operating profit” relates to the correct agricultural economic term, “net farm income” as it is calculated by deducting the “gross operating expenditure” (“overhead costs” in correct agricultural economic terms) from the “gross operating income”.

The “net operating margin” for the typical wildlife production systems was therefore calculated by expressing the net farm income as a percentage of the total farm gross margin (after allocation of variable costs). The “net operating margin” for the wildlife enterprise of the typical biltong hunting system was calculated by expressing the net farm income for the wildlife enterprise (after allocation of fixed costs) as a percentage of the gross margin of the wildlife enterprise (after allocation of

variable costs). Costs were allocated in accordance with the judgement of the wildlife producers that attended the wildlife discussion group meetings.

The “return on capital invested”, as used by ABSA (2003), is calculated by expressing the “net operating profit” (“net farm income” in correct agricultural economic terms) as a percentage of the “capital investments” made. “Capital investments” include land and fencing, wildlife, buildings and infrastructure as well as vehicles. This term relates to the agricultural economic correct term, “farm profitability”.

The “return on capital invested” for the typical wildlife production systems was therefore calculated by expressing the net farm income as a percentage of the total capital employed. It is therefore calculated in the same way as “farm profitability”. The “return on capital invested” for the wildlife enterprise of the typical biltong hunting system was calculated by expressing the net farm income for the wildlife enterprise (after allocation of fixed costs) as a percentage of the total capital employed. Investment in livestock is, however, deducted from the total capital employed. Again, costs will be allocated according to the judgement of the wildlife producers that attended the wildlife discussion group meetings.

For further comparison, the gross margin, expressed per large stock unit is practically the same as and will be compared to, what is called in ABSA (2003), the “gross operating income” (as explained above) expressed per large stock unit. Also, the net farm income expressed per large stock unit will be compared to, what is called in ABSA (2003), the “net operating profit” (as explained above) expressed per large stock unit. Capital investment per large stock unit was also compared with the wildlife production systems in the literature review.

### **3.2.4 Evaluation of wildlife production systems**

To address the dimensions defined above, specific information was needed from wildlife producers of typical wildlife production systems in the different areas selected. Wildlife discussion group meetings were facilitated in Beaufort West, George and Ceres, which selected wildlife producers were invited to attend.

#### ***3.2.4.1 Wildlife discussion group meetings***

The selection of wildlife producers for the discussion group meetings was based on the activities on the respective wildlife production units and the similarities thereof with the identified typical wildlife production system in the given area.

Of the 18 wildlife producers that responded in Beaufort West, the seven that indicated that biltong hunting, but no trophy hunting is facilitated on their wildlife production units, were invited. When it became clear that the attendance rate would be too low, a few wildlife producers that facilitated both biltong and trophy hunting were also invited. It was, however, made clear that the discussion will address the typical biltong hunting wildlife production unit, and therefore only biltong hunting and no trophy hunting aspects will be discussed. A total of four wildlife producers attended the wildlife discussion group meeting in Beaufort West, of which two facilitate biltong hunting only and two facilitate both biltong and trophy hunting on their wildlife production units. Of the 14 wildlife producers that responded in the Southern Cape region, only the six that facilitate trophy hunting on their wildlife production units, were invited to the wildlife discussion group meeting. A total of two wildlife producers attended the meeting, held in George. The wildlife producers from all five wildlife production units in the Ceres region were invited to the wildlife discussion group meeting in Ceres. Three wildlife producers attended the meeting. Two of them, however represented the same wildlife production unit, and therefore only two wildlife production units were represented,

In Beaufort West and the Southern Cape regions, the discussion days were successful in terms of defining a typical wildlife production system in both of these areas. At the discussion day of the Ceres group, however, it became clear that it is not possible to define a typical wildlife production system for that area, as the wildlife production units occurring there are totally different from each other. It was therefore decided to exclude the Ceres wildlife production system from further evaluation.

#### **3.2.4.2 *The data***

Data was collected to be representative of the respective typical wildlife production systems. This was done in the form of a questionnaire that was completed by the principal investigator after the group of wildlife producers reached consensus on the answers. An agenda with discussion points was supplied to wildlife producers that attended the meetings (refer to Appendix 2).

Firstly, attention was given to the profile of the typical wildlife production unit; the size of the unit as well as wildlife, livestock and crop enterprises were properly defined. The wildlife enterprises, each species separately, was then defined according to the age and sex structures of the flock, the natality (calving or lambing percentage), wean and mortality percentages as well as the distribution of the different ways in which the animals are marketed. Income sources from wildlife as well as other income related to the specific wildlife enterprise were thoroughly defined in terms of price and quantity. Direct costs from that particular wildlife enterprise were also covered. This process was then repeated for every wildlife species that typically occur on the defined typical wildlife production

unit. Other income, such as ecotourism activities, which was not related to any wildlife species specifically, was then recorded. The same procedure was followed for the livestock enterprises and the crop enterprises were attended to with an equal sense of detail.

In order to follow a whole farm approach, information regarding the size and the value of the land, fixed improvements and vehicles was also collected and details regarding the number of workers, their position status as well as education, skills and wage levels were recorded. Furthermore sundry farm income, overhead costs, external factor costs and own factor costs were described. Finally, the condition and ecological capacity of the natural veld were described by the wildlife discussion group.

Data collected from these wildlife discussion groups was captured into an Excel whole farm model that was designed for this purpose. This model was designed according to the dimensions and criteria defined for the evaluation of these typical wildlife production systems and it automatically calculated all figures and ratios described above under the heading: "Dimensions and criteria of evaluation".

### **3.2.5 Critical success factors**

In any business there are certain factors that will influence the financial performance of the business in either a direct or an indirect manner. It is therefore necessary to identify the critical success factors that will influence each of the identified dimensions and criteria for evaluation.

Wildlife producers that attended the wildlife discussion group meetings and have lots of experience in wildlife production, were asked to identify the critical success factors that have a real influence on the identified typical wildlife production units. Expected critical success factors would be factors such as the reproduction and mortality rates and the social structure of the wildlife species as well as the history, such as prior disturbances, and ecological capacity of natural vegetation in the given area. Critical success factors identified will be discussed in Chapter 5.

## CHAPTER 4

### CHARACTERISTICS OF WILDLIFE PRODUCTION SYSTEMS

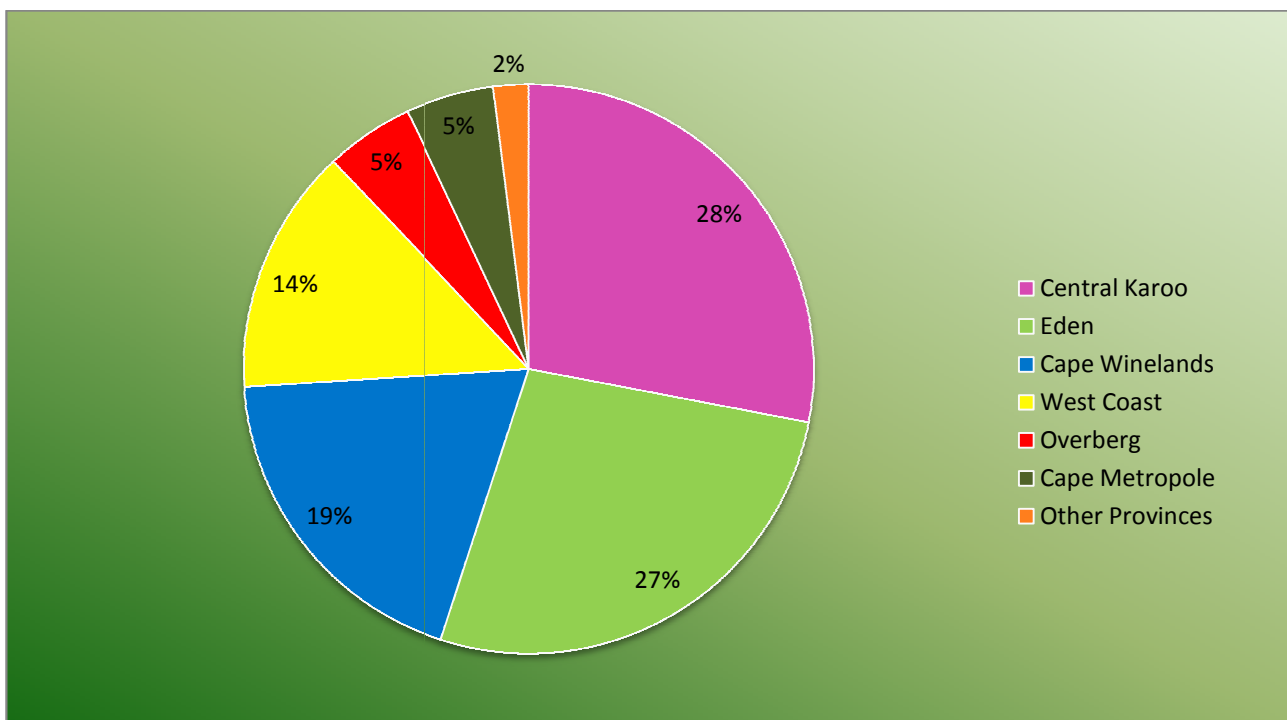
In this chapter, the results of the survey will be presented and discussed. Characteristics that are revealed include some demographic aspects and management characteristics of wildlife production units, infrastructure to be found on these units and other relevant information.

#### 4.1 DEMOGRAPHIC ASPECTS

Demographic information requested from wildlife producers included the name of the owner, contact details, postal address and the name of the wildlife production unit. Information regarding the nearest town and distance to the nearest town from the wildlife production unit, a possible GPS-reading, the total area of the wildlife production unit and the area allocated to wildlife were also obtained.

##### 4.1.1 Location of wildlife production units

Most of the returned questionnaires were from wildlife production units located in the Central Karoo (28%) and Eden (27%) District Municipalities (refer to Figure 4.1).



**Figure 4.1: The distribution of wildlife production units in the different district municipalities of the Western Cape**

The 5% that are located in the Overberg District Municipality seems low (refer to Table 4.1). This may be because no information was received from the Cape Agulhas, Overstrand and Theewaterskloof Local Municipalities.

**Table 4.1: Distribution of wildlife production units in the different local municipalities of the Western Cape**

<b>Municipalities in the Western Cape</b>	<b>Percentage of wildlife production units (%)</b>
<b>Cape Winelands District Municipality</b>	
Breede River / Winelands	6
Breede Vallei	3
Witzenberg	5
Drakenstein	4
Stellenbosch	1
<b>Overberg District Municipality</b>	
Swellendam	5
Theewaterskloof	0
<b>Eden District Municipality</b>	
Kannaland	6
Hessequa	5
George	1
Mossel Bay	8
Oudtshoorn	4
Knysna	1
Uniondale	1
<b>Central Karoo District Municipality</b>	
Beaufort West	19
Laingsburg	4
Murraysburg	1
Prince Albert	3
<b>West Coast District Municipality</b>	
Bergriver	3
Cederberg	4
Swartland	7
<b>Cape Metropole District Municipality</b>	
Cape Metropole	5
<b>Other provinces<sup>a</sup></b>	
Hoogland	1
Aberdeen	1

Footnote: a. Refer to two wildlife production units that fall just outside the boundaries of the Western Cape Province, in the Northern Cape and Eastern Cape Provinces respectively.

Although many wildlife producers did not participate in the study, a total of 115 wildlife production units were confirmed through this survey and these are widely spread in the Western Cape.



Towns with the most wildlife production units in their surrounding areas are Beaufort West, Mossel Bay, Barrydale and Ceres (refer to Figure 4.2).

Most wildlife production units in the Western Cape are located within a reasonable distance from the nearest town. The distances vary from one kilometre to 120 kilometres, with 29% of wildlife production units occurring within a radius of 10 kilometres from the nearest town (refer to Table 4.2) and 76% of wildlife production units occurring within a radius of 40 kilometres. From the returned questionnaires, 55% of respondents indicated that their wildlife production units neighboured one or more other wildlife production units.

**Table 4.2: Distance from wildlife production unit to the nearest town**

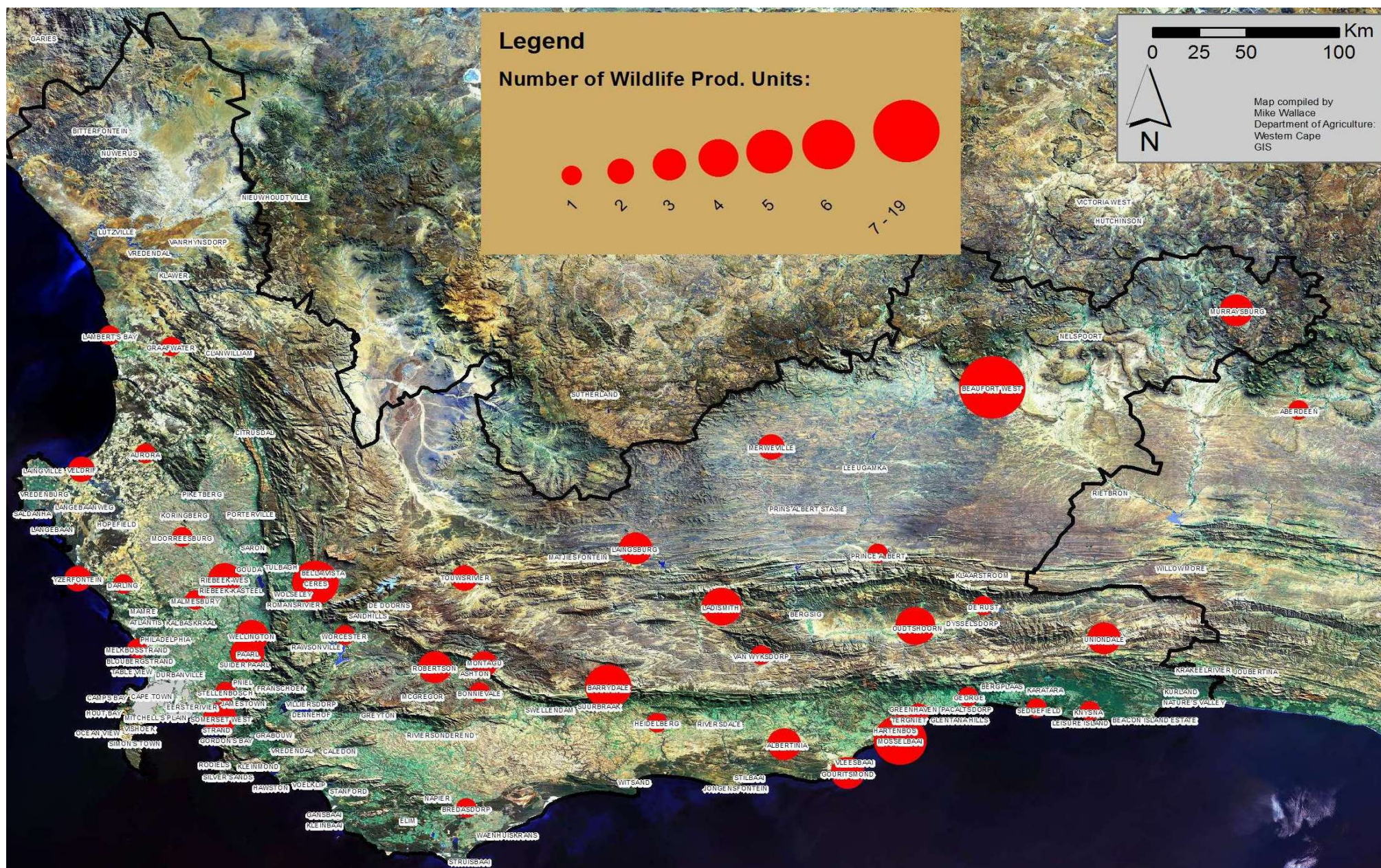
Distance to nearest town (km)	Percentage of wildlife production units (%)	Accumulative percentage (%)
0 - 10	29	29
10 - 20	17	46
20 - 30	19	65
30 - 40	11	76
40 - 50	8	84
50 - 60	3	87
60 - 70	4	91
70 - 80	5	96
80 - 90	0	96
90 - 100	2	98
100 - 110	0	98
110 - 120	1	99
Not indicated	1	100

#### **4.1.2 Size of and area covered by wildlife production units**

The wildlife production units that were part of the study cover a total of 522 282 hectares. The area of these wildlife production units inside the boundaries of the Western Cape Province extend over 4.36% of the area of 11.5 million hectares of agricultural land and 4.04% of the total area of 12.9 million hectares of the Western Cape Province. This compares with the 730 731 hectares under government conservation areas, which covers 5.6% of the total area of the Province (The Directorate: Agricultural Statistics, 2008).

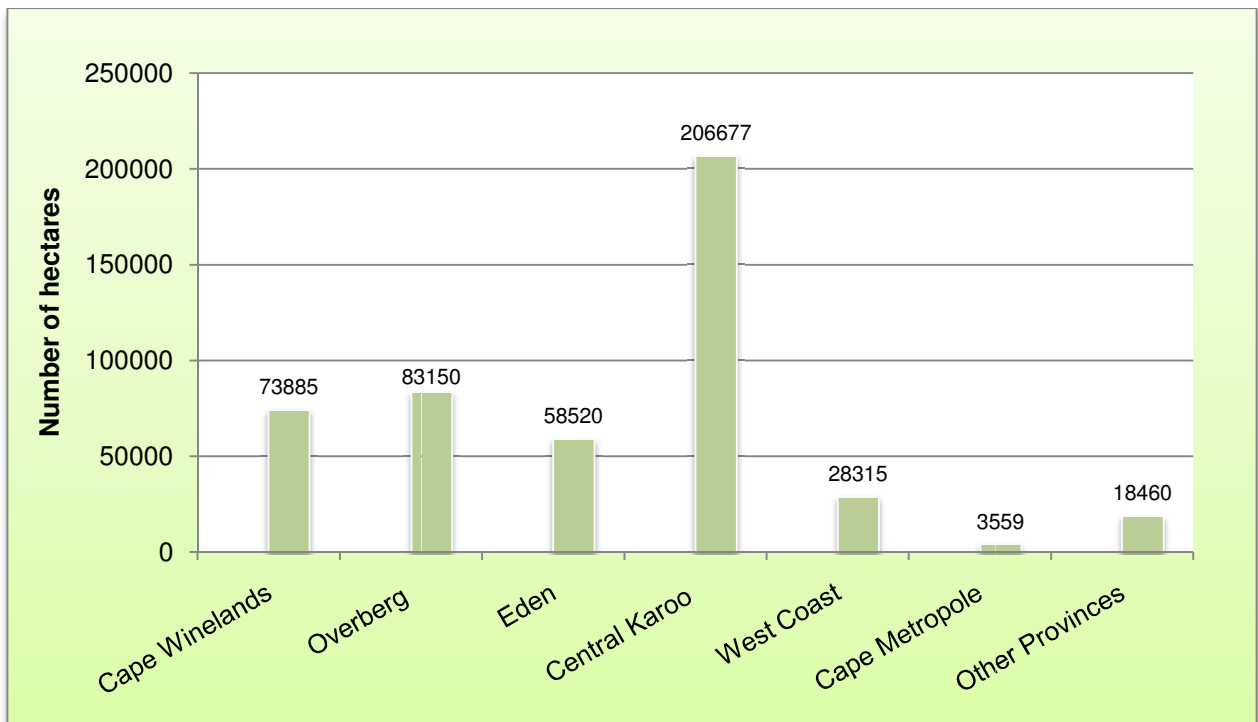
The smallest wildlife production unit occupies 12 hectares and is located in the Cape Winelands District Municipality, while the biggest wildlife production unit in this study is located in the Overberg District Municipality and occupies 54 000 hectares.





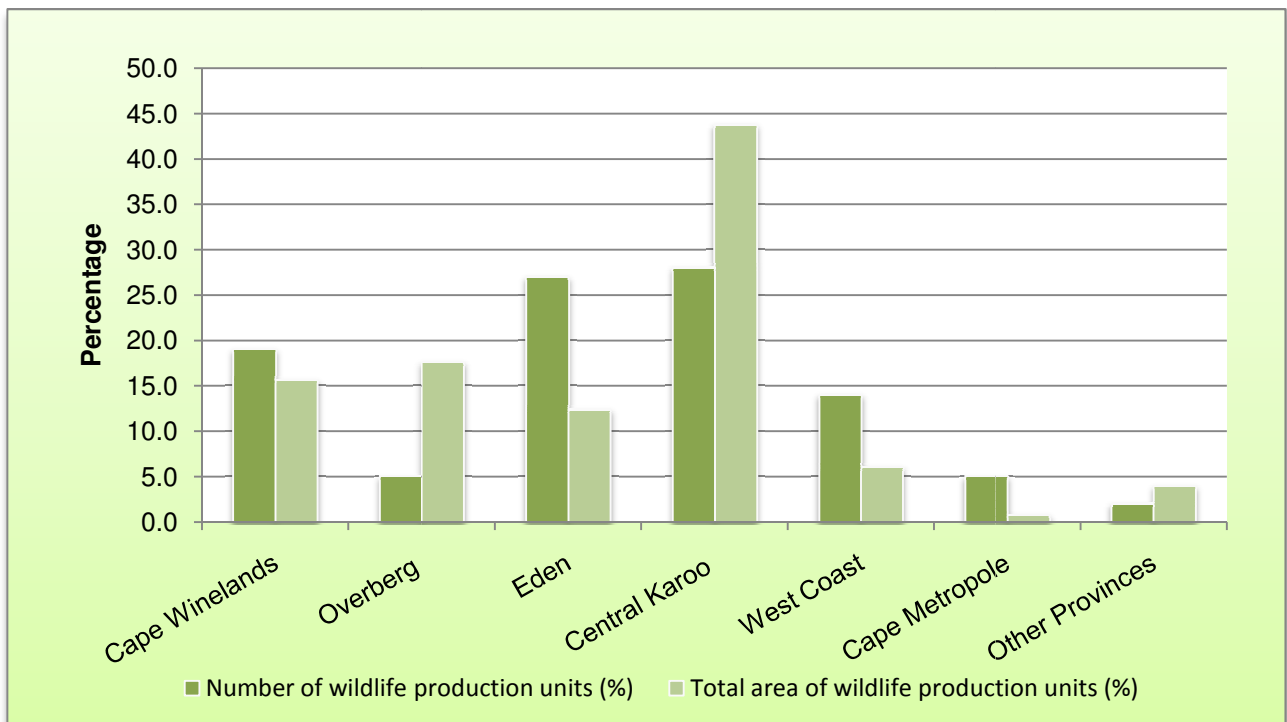


The Central Karoo District Municipality houses the largest number of hectares under wildlife production, followed by the Overberg District Municipality (refer to Figure 4.3).



**Figure 4.3: Total area occupied by wildlife production units in the different district municipalities of the Western Cape**

The number of wildlife production units is compared to the area covered in Figure 4.4.



**Figure 4.4: The number of wildlife production units compared to the area covered in the different district municipalities of the Western Cape**

When comparing the area covered by wildlife units to the number of these wildlife units in each District Municipality, it is clear that those wildlife production units in the Central Karoo and Overberg occupy bigger areas than the rest. This seems sensible as farming units in the Central Karoo and Overberg are larger than farming units in the rest of the province.

The results showed that most (67%) wildlife production units have a total area smaller than 5 000 hectares (refer to Table 4.3), and therefore 33% occupy more than 5 000 hectares.

**Table 4.3: Total area of wildlife production units in the Western Cape**

Size of wildlife production unit (ha)			Percentage of wildlife production units (%)
0	-	5 000	67
5 000	-	10 000	22
10 000	-	15 000	6
15 000	-	20 000	3
20 000	-	25 000	1
	>	25 000	1

Many wildlife production units facilitate not only wildlife production, but also commercial livestock and other agricultural practices. This implies that the total area of the wildlife production unit is not necessarily occupied by wildlife and wildlife related practices. When focussing on the areas of wildlife production units that are specifically allocated to wildlife production (therefore excluding sections that carry no wildlife or wildlife related practices), only 25% of wildlife production units in the Western Cape have an area allocated to wildlife production that is bigger than 5 000 hectares.

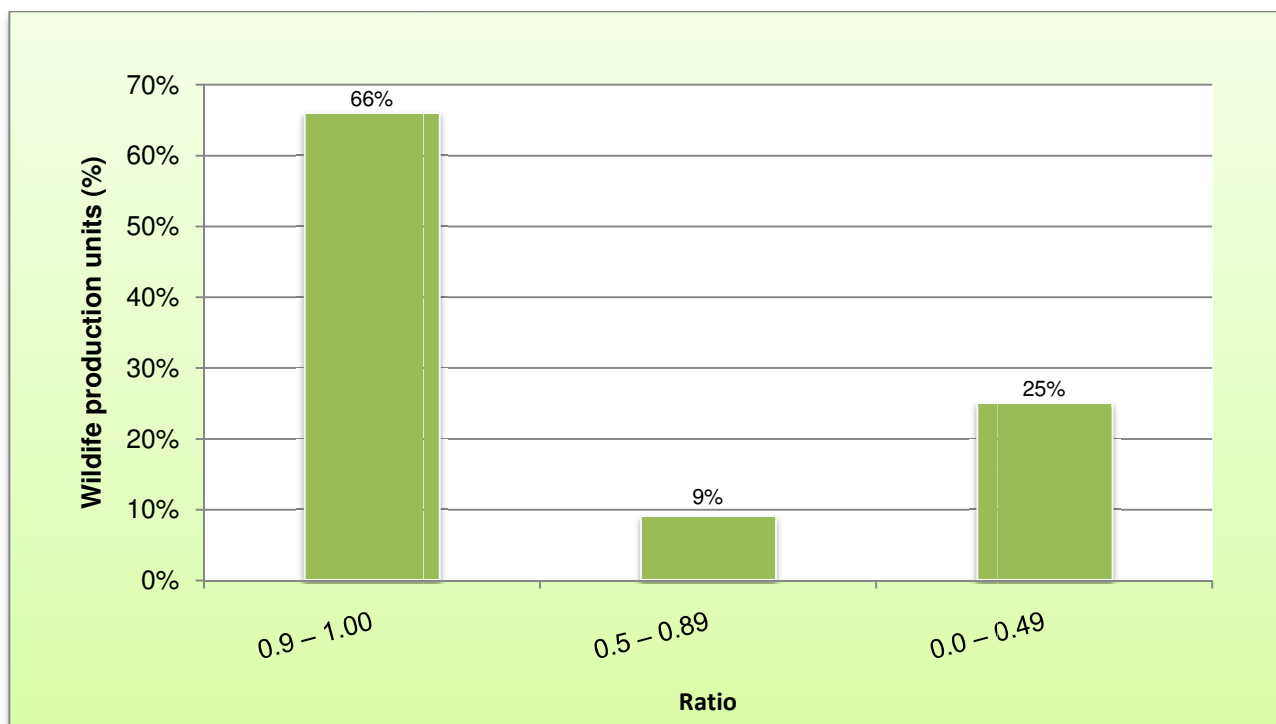
The Overberg District Municipality has the highest mean total area, followed by the Central Karoo District Municipality (refer to Table 4.4). This result seems unlikely since the Central Karoo and not the Overberg District Municipality is known for its large production units. The low response (5%) from the Overberg District Municipality definitely has an influence on this outcome, as well as the fact that two out of the three largest wildlife production units occur in this municipality. This distorted the results and therefore may render them unrepresentative of the district municipality. Of wildlife production units that were part of the study, 13.4% of the total area is allocated to practices other than wildlife production.

Only the Central Karoo (30%) and West Coast (40%) District Municipalities use a high percentage of the wildlife production unit for non-wildlife activities (refer to Table 4.4). This would be for commercial livestock and/or other agricultural practices. The rest of the district municipalities utilise most of the area for wildlife production.

**Table 4.4: Unweighted means of area allocated to wildlife production, as well as total area in the different district municipalities of the Western Cape**

District municipalities	Mean area allocated to non-wildlife (%)	Mean total area of wildlife production units (ha)
Overberg	2.6	13 983
Central Karoo	30.3	6 998
Cape Winelands	0.1	3 714
Eden	4.9	2 328
West Coast	40.3	2 213
Cape Metropole	6.7	712

A ratio was used to show the part of the wildlife production unit that is allocated to wildlife to the total area of the wildlife production unit. This shows that 66% of all wildlife production units in the study utilised 90% or more of the total area of the unit for wildlife production and related purposes (refer to Figure 4.5).

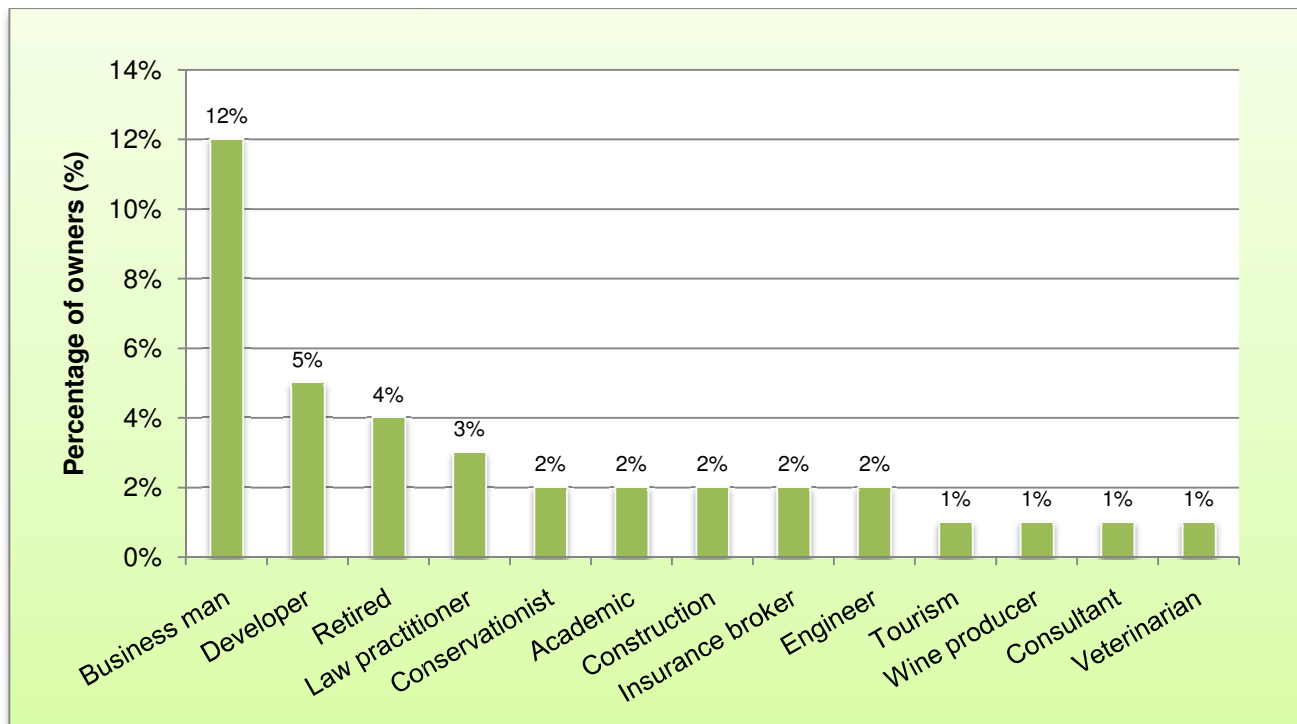


**Figure 4.5: Area allocated to wildlife as a ratio to the total area of the wildlife production unit**

#### 4.1.3 Owners of wildlife production units

Concerns have been raised in the past that wildlife production units mainly belong to investors from cities or other countries. Results show that 60% of owners of wildlife production units are full-time wildlife producers, which excludes the majority of Western Cape wildlife producers from the statement above.

Part-time producers are mainly business men (refer to Figure 4.6). Many wildlife production units are managed by a wildlife manager appointed by the owner.



**Figure 4.6: Occupation of owners that are part-time wildlife producers**

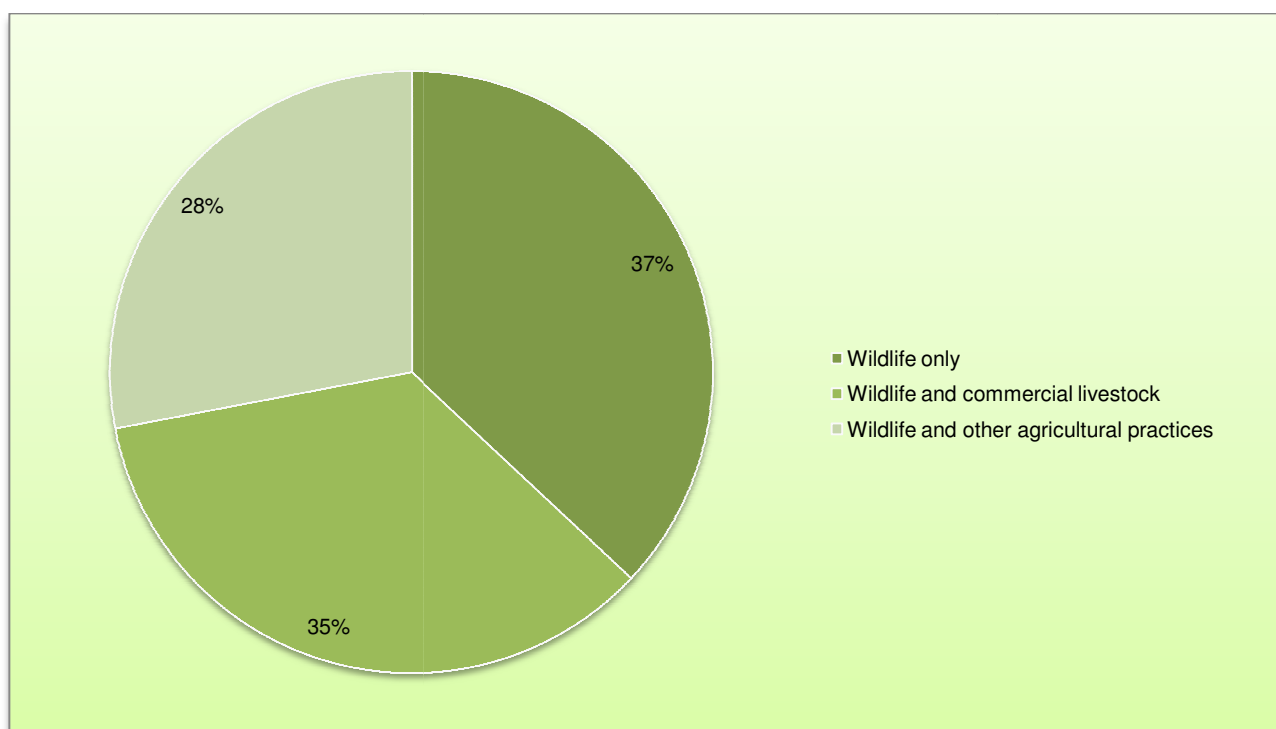
## 4.2 OPERATIONAL CHARACTERISTICS

### 4.2.1 Types of practices on wildlife production units

Wildlife production units in the Western Cape do not necessarily focus on wildlife production alone. On the contrary, practices on wildlife production units were divided into three main categories: wildlife production only, wildlife production in combination with commercial livestock, and wildlife production in combination with other agricultural practices.

The study showed that 37% of wildlife production units focus solely on wildlife production, while 35% of wildlife production units have commercial livestock in combination with wildlife production and 28% facilitate other agricultural practices together with wildlife production (refer to Figure 4.7).

In the Central Karoo District Municipality, wildlife production in combination with commercial livestock farming is the main practice, while the Eden District Municipality mainly focuses on wildlife production alone. The other district municipalities did not show favour for certain practices and are therefore of a mixed nature.



**Figure 4.7: Main practices on wildlife production units in the Western Cape**

#### 4.2.2 Utilisation of wildlife

The wildlife industry is very diverse - not only with regard to the species, but also the numerous ways in which wildlife or the wildlife experience can be utilised. Respondents were asked to indicate the different ways in which wildlife were utilised on wildlife production units. The most popular way of utilising or marketing wildlife in the Western Cape is through ecotourism, as indicated by 55% of wildlife production units (refer to Table 4.5). Hunting for own use, biltong hunting, trophy hunting and live sales are also common. Only game meat sales and the commercial harvesting of wildlife seem less popular.

**Table 4.5: Different ways of marketing wildlife in the Western Cape**

Utilisation practises	Percentage of wildlife production units (%)
Ecotourism	55
Hunting for own use	45
Biltong hunting	41
Live sales	41
Trophy hunting	38
Game meat sales	18
Commercial harvest	7
Other	8

While biltong hunting is a significant utilisation practise in the Central Karoo District Municipality (50% of wildlife production units;  $p = 0.00003$ ) and trophy hunting is prominent in both the Central Karoo (41% of wildlife production units;  $p = 0.03491$ ) and Eden District Municipalities (32% of wildlife production units;  $p = 0.03491$ ), the other district municipalities tend to concentrate more on ecotourism. Wildlife-viewing by means of “game drives”, birding, hiking trails, wild flower viewing and photo safaris are some of the ecotourism-based activities that are usually offered at wildlife production units (refer to Table 4.6). Three percent of respondents mentioned rock art as an additional activity on wildlife production units.

**Table 4.6: Ecotourism activities offered to tourist or guests in the Western Cape**

Activities	Percentage of wildlife production units (%)
Birding	54
Hiking trails	49
“Game drives”	47
Wild flower viewing	40
Photo safaris	36
Mountain biking	26
4 x 4 trails	22
Horse trails	21
Fishing	19
Quad biking	13
Other	11

#### 4.2.3 Employment

Because of the high unemployment rate in South Africa, job creation is an important aspect and subsequently an essential part of government strategy. One to five permanent jobs are allocated to wildlife production on 65% of wildlife production units (refer to Table 4.7). Five percent of wildlife production units in the Western Cape provide more than 20 job opportunities each, where 60 is the highest number of employees permanently employed on a wildlife production unit. A total number of 565 permanent jobs are allocated to the wildlife production units in the Western Cape that formed part of this study.

**Table 4.7: Number of permanent jobs allocated to wildlife production**

Number of permanent jobs allocated to wildlife production	Percentage of wildlife production units (%)
0	10
1 - 5	65
6 - 10	12
11 - 15	4
16 - 20	3
> 20	5

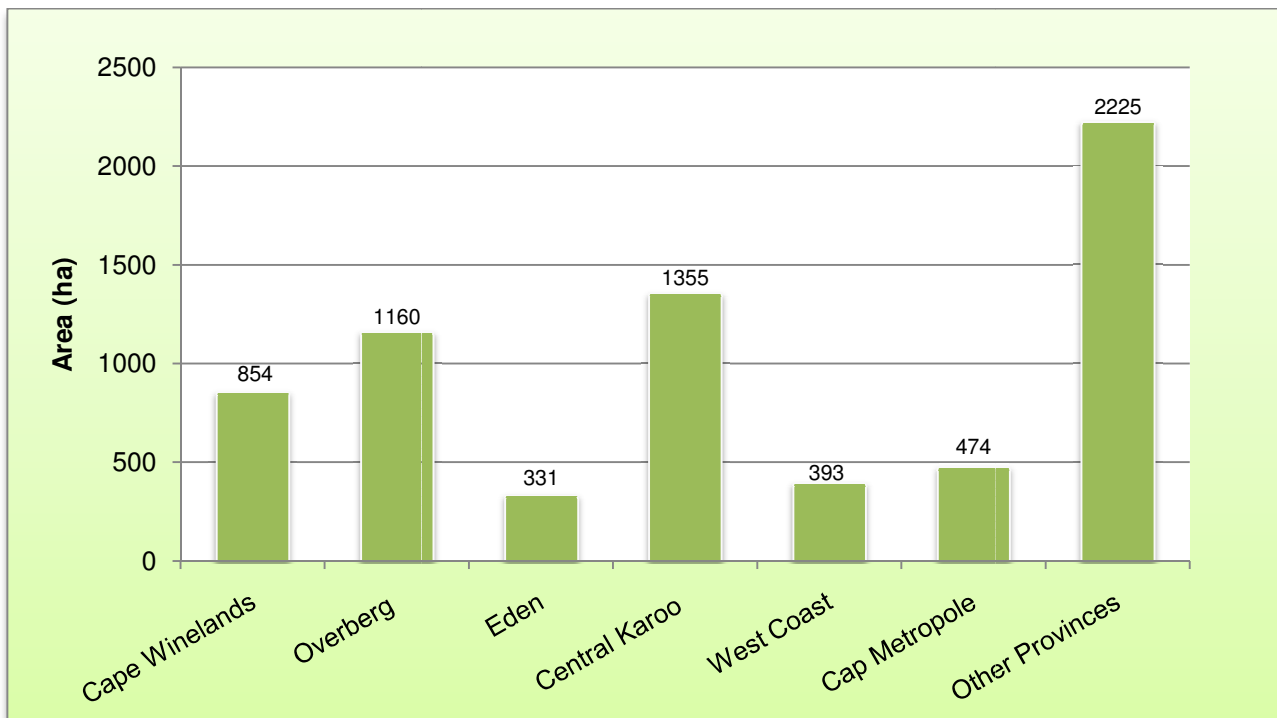


One to five temporary jobs is filled on 61% of wildlife production units, with 15% providing six to 10 temporary job opportunities (refer to Table 4.8). A total number of 364 temporary jobs are allocated to wildlife production in the Western Cape.

**Table 4.8: Number of temporary jobs allocated to wildlife production**

Number of temporary jobs allocated to wildlife production			Percentage of wildlife production units (%)
0			16
1	-	5	61
6	-	10	15
11	-	15	2
16	-	20	3
	>	20	4

Except for the wildlife production units situated in the other provinces, the Central Karoo District Municipality in Figure 4.8, has the largest wildlife production unit area per employee (1 333 hectares), followed by Overberg (1 168 hectares) and Cape Winelands District Municipality (772 hectares).



**Figure 4.8: Mean area covered by one permanently employed employee in the different district municipalities of the Western Cape**

#### 4.2.4 Growth potential

Wildlife production in the Western Cape has grown rapidly in the past few years (refer to Table 4.9). One of the reasons is that agricultural product prices have decreased to a point where some existing agricultural practices are not economically feasible anymore and farmers have been motivated to convert to wildlife production. Farmers also often convert from livestock to wildlife production due to losses caused by livestock theft. Conversion from livestock farming is, however, not the only tendency. In a lot of cases, natural veld that has been lying bare is now fenced and stocked with wildlife. Also existing units expanded their area by adding adjacent land.

**Table 4.9: Percentage of wildlife production units started in the Western Cape over different time periods**

Decade in which wildlife production was started	Percentage of wildlife production units (%)
1930 - 1940	1
1940 - 1950	1
1950 - 1960	1
1960 - 1970	2
1970 - 1980	9
1980 - 1990	14
1990 - 2000	41
2000 - 2006	30

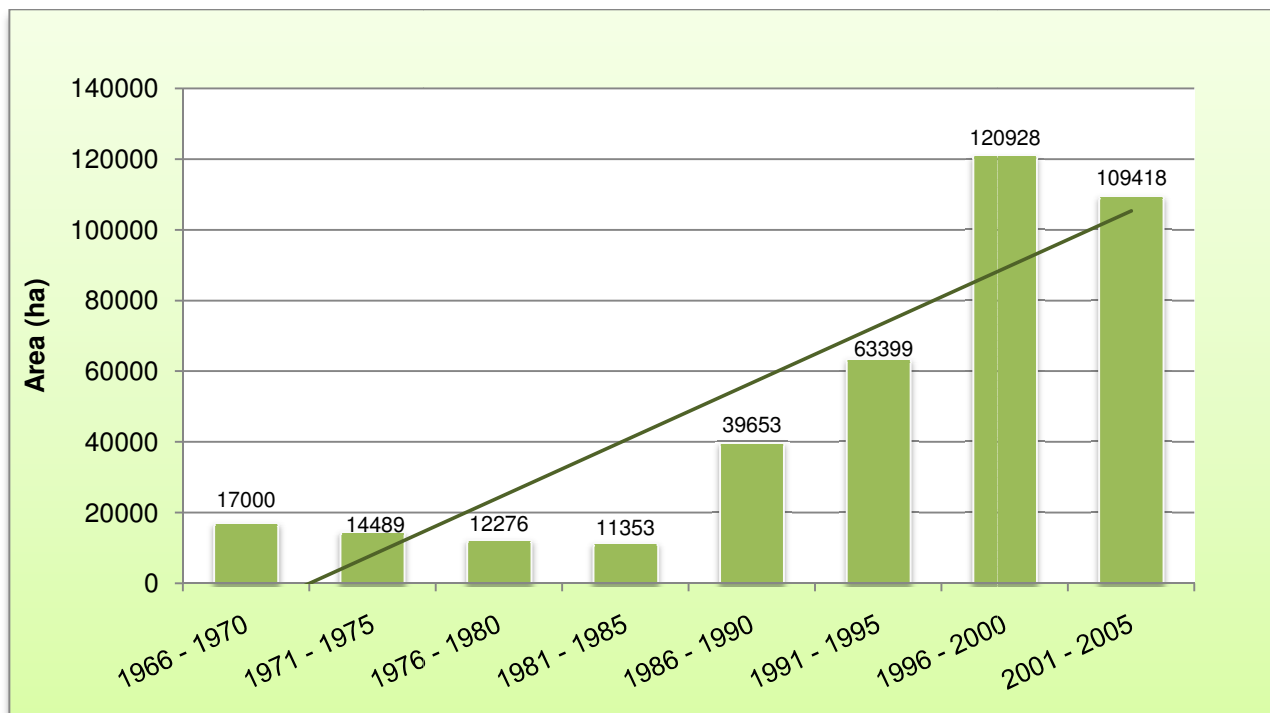
From 1970 onwards, more and more wildlife production units were established with the majority being established between 1990 and 2000. There has been a decrease in the number of wildlife production units established, from 41% in the previous decade to 30% from 2000 to 2006. This may lead to the impression that interest in wildlife production is starting to fade. However, it has to be kept in mind that the last period covers not 10 but only six years.

Table 4.10 illustrates another facet of the above discussion, showing that 56% of wildlife production units in this study were established within the past 10 years. An average of five new wildlife production units per year has been established over the past five years. This figure is only relevant to those units that were part of the study and in reality it should certainly be higher.

**Table 4.10: Number of years in which wildlife production is practised on wildlife production units in the Western Cape**

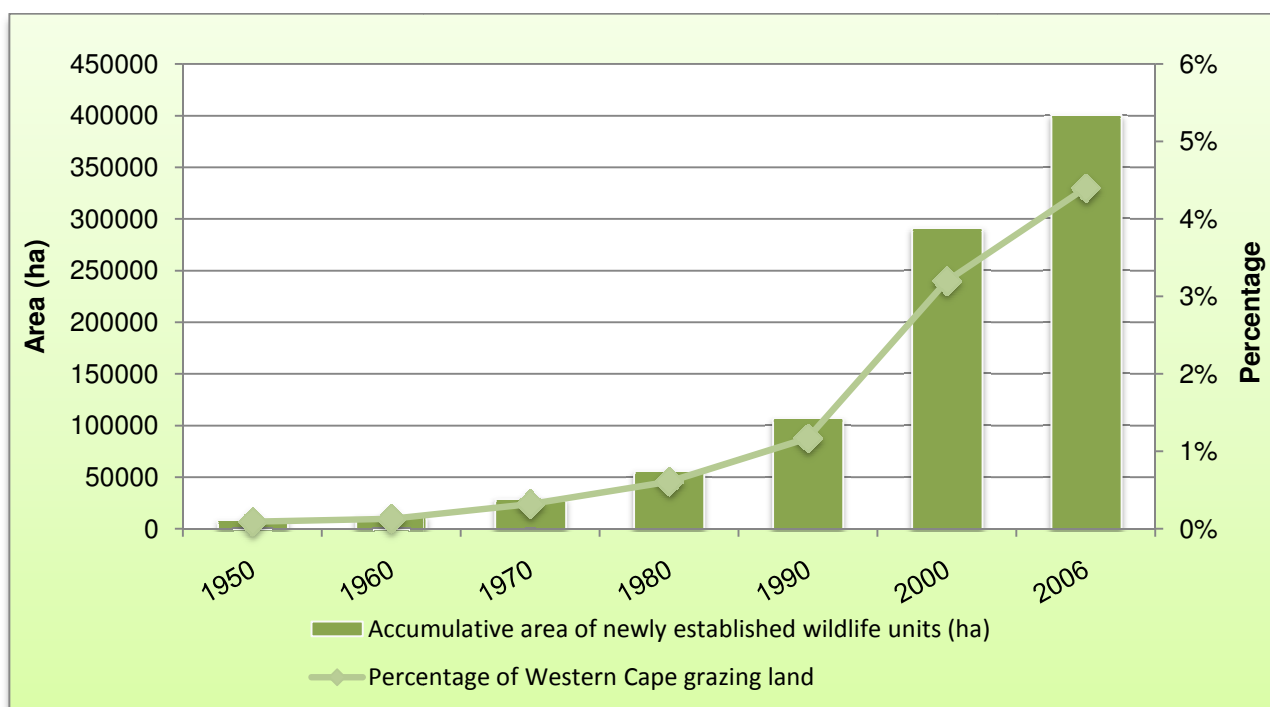
Number of years that wildlife production is practised	Percentage of wildlife production units (%)
0 - 10	56
10 - 20	23
20 - 30	9
30 - 40	7
40 - 70	3

The increase of the area covered by wildlife production units illustrates the growth in the wildlife industry over the past years. This is confirmed by a strong upward trend (refer to Figure 4.9).



**Figure 4.9: The growth of the Western Cape wildlife industry in terms of the increase in the area covered by wildlife production units**

The cumulative area of newly established wildlife production units, and the percentage of total Western Cape grazing land covered, can be viewed in Figure 4.10.



**Figure 4.10: Accumulative area of newly established wildlife production units over the past decades and the percentage of Western Cape grazing land**

A few respondents indicated they are not currently owners or managers of wildlife production units. Some of them did indicate that they are planning to start with wildlife production within the next three years. This could be an indication of the extent to which future growth is possible.

#### 4.2.5 Animal nutrition

Proper nutrition is essential for wildlife since it has an effect on the growth and reproduction of wildlife.

Respondents were asked to indicate whether wildlife on their units utilised natural veld, planted pasture or regular feeding as main source of nutrition. In 95% of the cases, natural veld is used as main source of nutrition for animals (refer to Table 4.11). On some wildlife production units, more than one main source of nutrition occurs.

Of all wildlife production units that provide regular feeding as main source of nutrition for animals, 63% are located in the Cape Winelands District Municipality. This might give the impression that the intensive wildlife production system is common in the Cape Winelands District Municipality. However, these turned out to include a number of wine farms, with a few wild animals in a small camp to serve as tourist attraction.

**Table 4.11: Main sources of nutrition that is utilised by wildlife in the Western Cape**

Main source of nutrition	Percentage of wildlife production units (%)
Natural veld	95
Planted pasture	15
Regular feeding	8

#### 4.2.6 Wildlife species

In spite of the limiting vegetation and habitat for certain wildlife species in the Western Cape, a high diversity of wildlife species do occur and thrive here. Information received from wildlife producers showed that springbok is the species that occurs on the most (86%) wildlife production units in the Western Cape (refer to Table 4.12). Following duiker and steenbok, which are not confined within fences, are gemsbok, eland and kudu.

**Table 4.12: Percentage of wildlife production units in the Western Cape on which respondents indicated that certain species occur**

Species occurring on wildlife production units	Percentage of wildlife production units (%)	Species occurring on wildlife production units	Percentage of wildlife production units (%)
Springbok	86	Giraffe	18
Duiker	76	Waterbuck	14
Steenbok	63	Nyala	11
Gemsbok	59	Buffalo	10
Eland	55	Reedbuck	8
Kudu	52	Rhinoceros (white)	6
Grey Rhebuck	45	Cheetah	5
Hartebeest (red)	42	Lion	5
Zebra	41	Elephant	4
Ostrich	40	Lechwe	3
Klipspringer	39	Sable Antelope	3
Cape Grysbok	34	Hippopotamus	2
Wildebeest (black)	34	Roan antelope	1
Bontebok	32	Hyena	1
Wildebeest (blue)	30	Lama	1
Impala	23	Wild dog	1
Leopard	22	Tsessebe	0
Fallow Deer	20	Oribi	0
Mountain Reedbuck	20	Rhinoceros (black)	0
Bushbuck	19	Suni	0
Blesbok	18	Other	11

Each species of the “big five” can be found in the Western Cape. Leopard, mostly free-roaming, was indicated to be present on 22% of wildlife production units and buffalo on 10%, while white rhinoceros, lion and elephant occur on 4% to 6% of wildlife production units. Species that were mentioned in the category “Other” included: black-backed jackal, caracal, Cape mountain zebra and bat-eared fox.

From those wildlife producers who indicated the number of species present, the average number of springbok present is 170 animals per wildlife production unit, followed by an average of 71 impala (refer to Table 4.13).

**Table 4.13: Average number of animals per species on Western Cape wildlife production units**

Species occurring on wildlife production units	Average number of animals per species per wildlife production unit	Species occurring on wildlife production units	Average number of animals per species per wildlife production unit
Springbok	170	Bushbuck	19
Impala	71	Zebra	19
Steenbok	61	Grey rhebuck	18
Kudu	53	Mountain reedbuck	18
Sable antelope	46	Cape Grysbok	17
Duiker	45	Waterbuck	17
Blesbok	42	Buffalo	14
Nyala	42	Lion	11
Eland	33	Hyena	8
Klipspringer	33	Cheetah	6
Gemsbok	27	Giraffe	6
Ostrich	27	Elephant	5
Fallow Deer	25	Wild dog	5
Wildebeest (blue)	24	Hippopotamus	4
Reedbuck	23	Rhinoceros (white)	4
Bontebok	21	Leopard	3
Hartebeest (red)	21	Roan antelope	1
Wildebeest (black)	21		

## 4.3 INFRASTRUCTURE

### 4.3.1 Water

Water is essential for all living things. However, the quality of water is seldom considered. Poor quality water can have devastating effects on wildlife. The protection of water resources for long-term sustainability is an increasingly important managerial consideration (Meyer & Casey, 2002).

On most wildlife production units in the study area, water is obtained from boreholes (refer to Table 4.14), with springs and perennial rivers to a lesser extent. Dams, watering troughs and natural water points are widespread.

**Table 4.14: Occurrence of water sources on Western Cape wildlife production units**

Water sources and water points	Percentage of wildlife production units (%)
<b>Water sources:</b>	
Borehole(s)	67
Spring(s)	36
Perennial river(s)	21
<b>Water points:</b>	
Dam(s)	69
Watering trough(s)	60
Natural water point(s)	55

### 4.3.2 Fencing

The sole purpose of a fence is to keep animals within the confines of the wildlife production unit. Different wildlife species require different kinds and heights of fences in order to be kept in. Crawlers such as springbok, sable antelope, gemsbok and red hartebeest are able to crawl underneath or through a fence and escape, which could result in serious financial losses. Jumpers such as eland, kudu and waterbuck *Kobus ellipsiprymnus*, require high enough fences, while breakers like rhinoceros and buffalo may require electric fencing. For some species, a common livestock fence will be adequate if they are not put under stress or threatened in some way.

On 56% of wildlife production units in the Western Cape, a wildlife-proof fence with a height of 2.4 m or more is present, while 45% of units have fences lower than 2.4 m. The fences lower than 2.4 m mostly are common livestock fences, but also include 1.8 m or 2.0 m “game fencing”. On some wildlife production units more than one type of fence exists.

Most (61%) wildlife production units have fences inside the area allocated to wildlife, operating on a camp system. This could be due to intensive wildlife production where rare species are kept in separate camps. These fences could also be remainders of previous livestock farming practices.

### 4.3.3 Facilities

Certain facilities are usually present on wildlife production units with the aim of increasing the income of the unit by adding value to the experience of the client. Most wildlife production units in the study area provide accommodation (refer to Table 4.15) to visitors, while conference and slaughter facilities can also be found on many. Additional facilities that were mentioned included restaurants, camping facilities, residential housing, health spas and lapas.

**Table 4.15: Facilities present on Western Cape wildlife production units**

Facilities	Percentage of wildlife production units (%)
Accommodation	68
Slaughter	31
Conference	29
Other	10

#### 4.4 OTHER INFORMATION

Questionnaires were sent out in both Afrikaans and English so that they could be completed in the preferred language of the wildlife producer. An interesting observation is that 62% of returned questionnaires were completed in Afrikaans and 38% in English.

##### 4.4.1 Further research

Respondents (91%) made it clear that it is necessary to conduct further research on the Western Cape wildlife industry. A lot of suggestions were made with regards to what kind of research is needed. These suggestions included species distribution according to habitat (refer to Table 4.16) to determine whether certain wildlife species will succeed in certain habitats, research on the nutritional requirements of different wildlife species, stocking rates and carrying capacities. Norms for stocking rates and carrying capacities in the Western Cape that are currently in use are vague since they present norms for the specific regions, but not necessarily for individual wildlife production units. It is noteworthy that suggestions for research on profitability or other financial considerations were not mentioned. This could mean that profitability is either not a problem, or that other problems are of higher priority at this stage.

**Table 4.16: Topics suggested for further research on the Western Cape Wildlife industry**

Suggested topics for further research	Percentage of wildlife production units (%)
Species distribution according to habitat	15
Nutritional research	12
Stocking rates/carrying capacities	10
Adaptability – relocation	8
Wildlife diseases	5
Species distribution – historically	4
Problem animals	3
Plant distribution	2
Game meat	2



Wildlife producers are supportive of further research, since 93% of respondents indicated that they are willing to participate further in this research.

#### 4.4.2 Opportunities

The greatest opportunities for the wildlife industry in the Western Cape according to wildlife producers are listed in Table 4.17. Ecotourism is seen by most as the greatest opportunity. Hunting offers a great opportunity to certain regions of the province.

**Table 4.17: Greatest opportunities for the Western Cape wildlife industry**

Greatest opportunities	Percentage of wildlife production units (%)
Ecotourism	63
Hunting	29
Game meat	8
Job creation	3
Unique characteristics	2

#### 4.4.3 Threats

Trade and transport of wildlife species in the Western Cape are subject to a lot of legislation. According to wildlife producers, the greatest threat to the Western Cape wildlife industry is the overregulation of the industry since most aspects mentioned pointed towards this issue. In Table 4.18 some of the major threats as pointed out by wildlife producers are listed. It is noteworthy that all these major threats can be traced back to government. Some other concerns that were raised by only a few respondents are climate change, the lack of information, problem animals and over-grazing.

**Table 4.18: Some major threats to the Western Cape wildlife industry**

Major threats	Percentage of wildlife production units (%)
Attitude of Nature Conservation	28
Limiting legislation	19
Fire arms policy	9
Government	7
Biodiversity Act	6

## **4.5 CONCLUSION**

The results of this survey leave no confusion regarding the significance of the wildlife industry in the Western Cape. With a high diversity of wildlife (at least 37 different species), ecotourism, hunting and live sales are the most prominent ways of utilising wildlife.

The industry grew rapidly in the past 10 years as indicated by the fact that 56% of the 115 wildlife production units were established during this period. An average of at least five new wildlife production units per year has been established over the past five years.

The wildlife production units that were part of the study cover a total area of 522 282 hectares. The area of these wildlife production units inside the boundaries of the Western Cape Province extends over 4.36% of the area of 11.5 million hectares of agricultural land and 4.04% of the total area of 12.9 million hectares of the Western Cape Province. This compares with the 730 731 hectares under government conservation areas, which covers 5.6% of the total area of the province (The Directorate: Agricultural Statistics, 2008). It, however, should not be overlooked that there are many wildlife production units in the Western Cape Province that did not take part in this study. This means that the percentage area covered by all private wildlife production units in the province could be much higher than the percentage area covered by the units that participated and therefore than the total area covered by government conservation areas.

The wildlife industry in the Western Cape Province has great potential and already plays a big role in the province. A lot of research still needs to be done to determine the full contribution and capacity of this industry.

## **CHAPTER 5**

### **EVALUATION OF TYPICAL WILDLIFE PRODUCTION SYSTEMS**

In this chapter, the information collected at the wildlife discussion group meetings, held in Ceres, Beaufort West and George will be presented. The typical wildlife production systems that were identified will be described and the results of the evaluation done on each of these typical wildlife production systems as well as critical success factors that influence each will be presented and discussed.

#### **5.1 DESCRIPTION OF TYPICAL WILDLIFE PRODUCTION SYSTEMS**

The identified typical wildlife production systems are ecotourism, biltong hunting and trophy hunting. Each typical wildlife production system will be described according to its characteristics in general, its presence in the Western Cape Province and its presence in the specific region in which it was identified.

##### **5.1.1 Typical ecotourism wildlife production system**

The typical ecotourism wildlife production system was identified in the Ceres region.

###### ***5.1.1.1 Ecotourism in general***

South Africa is a popular ecotourism destination as it offers unique attractions with its rich variety of wildlife species and the “big five” found nowhere outside of Africa. Ecotourism is a way of utilising wildlife in an indirect, non-consumable manner. Local as well as overseas tourists enjoy the aesthetic value of wildlife and the “big five” are therefore a major tourist attraction.

Ecotourism usually generates money from conference facilities, curio shops, accommodation and catering. Accommodation can include chalets, tented chalets and luxury lodges. Income is also generated from activities such as “game drives”, night drives, 4x4 trials, quad biking, mountain biking, donkey cart trips, horse trails, hiking trails, bird watching, photographic safaris, canoeing, abseiling, visits to bushmen paintings and waterfalls, and educational tours (ABSA, 2003; Bothma, 2004; NAMC, 2006).

###### ***5.1.1.2 Ecotourism in the Western Cape***

In the Western Cape, ecotourism is the most popular way of utilising wildlife since 55% of wildlife production units, that formed part of this study, facilitates ecotourism. Ecotourism activities in the

Western Cape include wildlife-viewing by means of “game drives”, birding, hiking trails, wild flower viewing, photo safaris, mountain biking, 4x4 trails, horse trails, fishing, quad biking and rock art.

In the Cape Winelands District Municipality 79% of wildlife production units facilitate ecotourism. Birding is the most popular activity, with 80% of these ecotourism wildlife production units facilitating birding. Wild flower viewing (67%), hiking trails (60%), photo safaris (47%), mountain biking (40%) and 4x4 trails (40%) are also popular.

Only two out of the five wildlife production units in the Overberg that were participating in this study, facilitate ecotourism. Of these, only one indicated wild flower viewing, birding, hiking trails and photo safaris as activities facilitated on the unit.

Sixty four percent of wildlife production units in the Eden District Municipality facilitate ecotourism, with birding and hiking (both occurring on 69% of ecotourism units) and photo safaris (63%) being the most popular activities. Wild flower viewing (44%), fishing (44%), mountain biking (44%) and horse trails (38%) are also common activities within the area.

In the Central Karoo District Municipality, only 35% of wildlife production units facilitate ecotourism. Hiking trails (89%), birding (78%), photo safari (67%) and 4x4 trails (67%) are by far the most popular activities on these units, followed by mountain biking (56%), quad biking (44%) and wild flower viewing (44%).

Ecotourism occurs on 57% of wildlife production units in the West Coast District Municipality. Birding (75%), photo safaris (75%), hiking (63%) and wild flower viewing (63%) are the most popular activities, followed by 4x4 trails (38%) and horse trails (38%).

Only two out of five wildlife production units participating in this study in the Cape Metropole District Municipality facilitate ecotourism and only one of these indicated birding, hiking and mountain biking as activities present on the unit.

#### ***5.1.1.3 Ecotourism in Ceres region***

According to the data obtained from the initial survey, four (80%) out of the five wildlife production units in the Ceres region, cater for ecotourism. On all (100%) of these ecotourism units, wild flower viewing, birding and hiking opportunities are present. Accommodation is also available at all of these units and conference facilities are available on one (25%) unit. Furthermore, mountain biking (75%), 4x4 trails (75%) and photo safaris (50%) are very popular in the Ceres region.

On 75% of these ecotourism wildlife production units, it was indicated that wildlife production was practised in combination with other agricultural activities. Half (50%) of the owners were full-time wildlife producers, while the other two were involved on a part-time basis. Wildlife utilises almost the total area of the unit, as the average size of these units is 11 030 hectares of which an average of 11 000 hectares are allocated to wildlife. The wildlife production units are on average 72 km from town.

The wildlife species most common on these units are common duiker (100%), klipspringer (100%), springbok (100%), steenbok (100%), grey rhebuck (100%), eland (75%), gemsbok (75%), Cape grysbok (75%), leopard (75%), ostrich (75%), bontebok (50%) and black wildebeest (50%).

### **Information from wildlife discussion group meeting in Ceres**

The true situation, however, was discovered at the wildlife discussion group meeting, held in Ceres itself. Although the data pointed out a lot of similar characteristics and activities, wildlife production units in the Ceres region were so diverse, that it was impossible to gather further information based on a “typical” wildlife production system in this region. Wildlife producers explained that some wildlife production units cater for the local tourism market, whereas others cater for the overseas market. On some units, accommodation is provided in lodges (with different star-ratings), whereas other provide accommodation in the form of chalets – some including breakfast, but others self-catering. Some units are fenced with wildlife-proof fencing, whereas others only have livestock fences. Species composition also differs and ranges from only a few smaller species to the “big five” species. It was therefore decided to eliminate this system from further evaluation and to focus on only the typical biltong hunting system and the typical trophy hunting system.

#### **5.1.2 Typical biltong hunting wildlife production system**

The typical biltong hunting wildlife production system was identified in the Beaufort West region.

##### ***5.1.2.1 Biltong hunting in general***

Hunting in South Africa is seen as an acceptable practice on condition that it is done ethically, which means the animal has a fair chance to escape from the hunter. Biltong hunters are typically South African residents who do not hunt only for purpose of getting meat, but also for the exceptional experience and the social aspects of it (Radder & Bech-Larsen, 2008).

South Africa has roughly 200 000 biltong hunters, of whom 50 000 are regular hunters who usually hunt three times per year, for a duration of four days per hunt and hunt an average of five animals per person (Saayman & Van der Merwe, 2006). The top 10 most popular species hunted in South Africa by biltong hunters are springbok, impala, blesbok, kudu, warthog, blue wildebeest, gemsbok, eland, mountain reedbuck and red hartebeest (Van der Merwe & Saayman, 2006).

#### ***5.1.2.2 Biltong hunting in the Western Cape***

Biltong hunting in the Western Cape is facilitated on 41% of wildlife production units and is one of the most popular ways of utilising wildlife in the Western Cape. Fifty nine percent of these units also facilitate trophy hunting and 74% of wildlife producers do some hunting themselves, mainly for own consumption. Hunting for game meat and commercial harvest is facilitated on 28% and 10% of wildlife production units respectively.

In the Cape Winelands District Municipality, 26% of wildlife production units facilitate biltong hunting. On 80% of these units, wildlife producers do some own hunting. Forty percent of these units also facilitate trophy hunting, while none facilitate hunting for either commercial harvest or game meat.

Only one out of five farms in the Overberg that participated in this study facilitate biltong hunting. No other hunting occurs on this unit.

Thirty six percent of wildlife production units in the Eden District Municipality facilitate biltong hunting, with 78% of these also facilitating trophy hunting, 67% practise hunting for own consumption, 33% hunting for game meat and on 11% of these units, hunting for commercial harvest.

In the Central Karoo District Municipality, 77% of wildlife production units facilitate biltong hunting, while 55% of those also facilitate trophy hunting. As in the Cape Winelands District, own hunting is practised on 80% of these units. Hunting for game meat and commercial harvest occurs only on 35% and 10% of the units respectively.

Biltong hunting plays no significant role in the West Coast District Municipality as only two out of 14 (14%) of the wildlife production units cater for biltong hunting. One of these two units also caters for trophy hunting, but both practise hunting for own consumption. Neither of these units allows for hunting for game meat or commercial harvest purposes.

Of the five wildlife production units in the Cape Metropole District Municipality that formed part of the study, none (0%) facilitate biltong hunting. No other hunting occurs on any of these units, except for the wildlife producer on one unit that sometimes hunts for own consumption.

#### **5.1.2.3 Biltong hunting in Beaufort West region**

In the Beaufort West region, 71% of wildlife production units facilitate biltong hunting. Although some of these biltong hunting units also cater for trophy hunting, 58% of these units cater for biltong hunting only. These are the units that were looked into for the typical biltong hunting wildlife production units. On 86% of these biltong hunting units hunting for own consumption is practised, while hunting for game meat occurs on 29% of the units. No hunting for commercial harvest is allowed for on the biltong hunting units in the Beaufort West region.

All of these biltong hunting wildlife production units practise wildlife in combination with commercial livestock. The owners of these wildlife production units manage their units on a full-time basis. The size of these wildlife production units are on average 8 125 hectares, of which an average of 6 200 hectares is allocated to wildlife. The units are on average 42 km from town. Fifty seven percent of these biltong hunting units have accommodation available and 29% provide slaughtering facilities.

The wildlife species most common on these units are springbok (on 100% of units), kudu (86%), steenbok (71%), gemsbok (57%) and common duiker (57%).

#### **Information from wildlife discussion group meeting in Beaufort West**

The participants at the wildlife discussion group meeting, described a typical biltong hunting wildlife production unit in the Beaufort West region as a 10 000 hectares unit, of which two hectares is planted with lucerne under irrigation and the rest under natural vegetation. This typical biltong hunting unit houses a flock of Merino sheep, consisting of 700 breeding ewes, 500 springbok, 40 kudu and 25 gemsbok. Five permanent workers are appointed on such a unit, as well as one casual worker.

Lucerne yields 15 tons per hectare, of which 40% is used as feed for sheep during dry years. Every other year is a dry year and the average of 20% was therefore used in the calculations. Fertiliser, herbicides and packing material are the only directly allocatable costs applicable to the crop enterprise. The natural vegetation, used for grazing, has an ecological capacity of 36 hectares to 25 hectares per large stock unit.

The livestock enterprise has a female to male ratio of 30 ewes to one ram. Lambing percentage is 85% and weaning percentage is 70% of lambs. The natural mortality is 4% and about 20 sheep are lost due to livestock theft. Seven percent of marketable sheep are available to workers at 20% discount. One third of marketable sheep are held back for replacement ewes, whereas the rest are sold to an abattoir at R31/kg, each slaughtered sheep weighing around 25kg. About three rams are purchased per year at R3 500 per ram. Wool yields on average 3.5kg wool per sheep per annum and is sold for an average of R36/kg. Directly allocatable variable costs include feed from the lucerne enterprise, veterinary and medicine, contract work for shearing the sheep, packing material for wool, commission paid (9% of income from wool) as well as transport costs for wool bales.

The wildlife enterprise consists of the springbok, kudu and gemsbok enterprises, each generating an income from animals marketed but also contributing to sundry income.

The springbok enterprise consists out of 80% ewes and 20% rams. Natality rate (percentage of calves or lambs borne per breeding female) is 68% and the weaning percentage (percentage of calves or lambs that reached weaning age) is 75%. Thirty percent of animals are marketed in one way or the other. One percent of these animals are used for own consumption, 5% are marketed by means of live sales (R300 per animal), 5% are harvested for game meat (R420 per animal) and the bulk of 89% is hunted by biltong hunters (R400 per animal). Ten springbok are purchased per year at R700 per animal. The sex ratio of the kudu enterprise is nine cows to one bull. The natality rate is 100% and the weaning percentage 90%. In total, 25% of marketable animals are hunted by biltong hunters at a price of R2 500 per bull and R1 900 per cow. No purchases are done for the kudu and gemsbok enterprises. The gemsbok enterprise also has a sex ratio of nine cows to one bull. The natality rate is 85% and the weaning percentage is 90%. Again, 25% of animals are marketed, all by means of biltong hunting. The price paid by biltong hunters to hunt gemsbok is R3 000 per animal.

Directly allocatable variable costs involved in the wildlife enterprise are a mere R1 300 per annum, which includes marketing on the website as well as damage to crockery used in self-catering unit. Apart from income generated from the animal itself, sundry income in the form of accommodation and daily fees contributes largely to the wildlife enterprise. Biltong hunters stay for an average of three nights, paying R200 per person per night. An additional daily fee of R200 per person per day is also payable for an average of two days.

Fixed improvements typical to such biltong hunting wildlife production unit include one farm house (non-farm fixed improvement), four worker houses, three accommodation units, one store, one



workshop, one slaughtering facility, one cooling room and fences on the outside borders of the unit. About one third of the unit is fenced with wildlife-proof fencing. Moveable assets would typically consist of two motor bikes, one double cab vehicle, two pick-up light delivery vehicles, one tractor and one trailer (refer to Table 5.1).

**Table 5.1: Inventory of land, fixed improvements and moveable assets on the typical biltong hunting unit in the Beaufort West region**

Inventory of typical biltong hunting unit	Present value (R)
<b>Land</b>	
Market value for land and fixed improvements	12 561 300
Market value for bare land: lucerne (2 ha @ R55 000/ha)	110 000
Market value for bare land: grazing land (9998 ha @ R1 100/ha)	10 997 800
<b>Fixed improvements</b>	<b>1 453 500</b>
Worker houses (4 houses)	400 000
Accommodation (3 units)	120 000
Store	400 000
Workshop/meeting room	60 000
Slaughtering facility	100 000
Cooling room	40 000
Wildlife-proof fences	333 500
<b>Moveable assets</b>	<b>341 655</b>
Motor bikes (2 bikes)	13 200
Double cab vehicle	137 500
Pick-up light delivery vehicles (2 vehicles)	165 000
Tractor	17 763
Trailer	8 192

Depreciation for fixed improvements and the vehicles was calculated on the straight-line method, while the depreciation for the tractor and trailer was calculated using the reducing-balance method as suggested by Van Zyl (1999). Half of the expected lifetime was used as current age to calculate the accumulative depreciation and therefore the present value of the typical system.

Wildlife producers indicated that debt on this typical biltong hunting system will consist of a long-term loan of R100 000 at an interest rate of 12%, payable over 15 years, as well as a medium-term loan of R50 000 with an interest rate of 13%, payable over three months. Return to own management was indicated as R20 000 per month.

### 5.1.3 Typical trophy hunting wildlife production system

The typical trophy hunting wildlife production system was identified in the Southern Cape region.

### **5.1.3.1 Trophy hunting in general**

Trophy hunters are usually foreigners that come to South Africa to hunt a certain number of specific wildlife species, and keep the trophies of the animals that were hunted. The trophy is usually the horn of a male herbivore or the skin of a carnivore. To qualify as a suitable trophy animal, it has to have certain qualities. It should typically be a male animal with large horns. The horns usually reach true trophy size when the animal is in its prime. Trophy hunters are at all times accompanied and supervised by a professional hunter (Steenkamp *et al.*, 2005).

Trophy hunting is marketed to foreign clients through trade shows or via the internet. Trophies are usually offered in package deals, which, over a period of one week, for example, could include four to eight animals to hunt. Income derived from these packages not only includes the price of the animals hunted, but also accommodation costs, and fees charged by professional hunters, trackers, butchers and taxidermists. On average, trophy hunters stay for about 10 days, hunt more or less nine animals and spend in the region of R50 000 each, which excludes the price of the trophy (ABSA, 2003).

### **5.1.3.2 Trophy hunting in the Western Cape**

Trophy hunting is facilitated on 38% of wildlife production units in the Western Cape – almost as popular as biltong hunting. Of these units, 62% also cater for biltong hunting and 54% practise hunting for own consumption. Hunting for game meat and commercial harvest occurs on 27% and 19% of wildlife production units respectively.

Trophy hunting is facilitated on only four out of the 19 (21%) wildlife production units in the Cape Winelands District Municipality. On two (50%) of these trophy hunting units biltong hunting is also facilitated and on two (50%), hunting for own use is practised, but none (0%) allows for any hunting for game meat or commercial harvest.

Of the five wildlife production units in the Overberg District Municipality that participated in this study, only one (20%) facilitates trophy hunting. This unit also caters for biltong hunting, but no hunting for own use, game meat or commercial harvest is allowed for.

In the Eden District Municipality, 48% of wildlife production units cater for trophy hunting. On 58% of these trophy hunting units, biltong hunting is also facilitated. Furthermore, on 58% of these units, hunting for own consumption is practised and game meat and commercial harvest occur on 42% and 17% of trophy hunting units respectively.

Trophy hunting is facilitated on 58% of wildlife production units in the Central Karoo. On 73% of these units, biltong hunting is also catered for, while hunting for own consumption, game meat and commercial harvest occur on 60%, 27% and 20% of these units respectively.

Only four out of 14 (29%) wildlife production units in the West Coast facilitate trophy hunting. One of these units also cater for biltong hunters and one practised hunting for own consumption, while none (0%) provide for hunting for game meat or commercial harvest.

Hunting is no priority in the Cape Metropole District Municipality, as none out of the five wildlife production units that formed part of this study facilitate any trophy hunting. In fact, no hunting is practised in this district, except for occasional hunting for own consumption on one unit.

#### **5.1.3.3 Trophy hunting in the Southern Cape region**

The Southern Cape region includes areas surrounding Mossel Bay, Hartenbos, Albertinia, Gouritzmond, George and Sedgefield. In this region, 43% of wildlife production units facilitate trophy hunting. On 50% of these trophy hunting wildlife production units, hunting for own consumption is practised, while hunting for game meat and commercial harvest occur on 67% and 33% of units respectively.

On 83% of these trophy hunting units, it was indicated that wildlife production was the only production activity on the unit; and on 67% of units, owners are managing their units on a full-time basis. Wildlife utilises almost the total area of the unit, as the average size of these units is 1 751 hectares of which an average of 1 661 hectares are allocated to wildlife. The wildlife production units are on average 18 km from town.

The wildlife species most common on these units are bontebok (100%), bushbuck (100%), duiker *Sylvicapra grimmia* (100%), eland (100%), Cape grysbok (100%), kudu (100%), impala (100%), Burchell's zebra (100%), nyala (83%), red hartebeest (83%), mountain reedbuck (83%), springbok (83%), steenbok (83%), blue wildebeest (67%), ostrich (67%), gemsbok (50%), giraffe *Giraffa camelopardalis* (50%), and common reedbuck *Redunca arundinum* (50%).

The averages in an area, however, are not necessarily a true reflection of what is typical in that area. More information therefore was collected from wildlife producers themselves.

## **Information from wildlife discussion group meeting in George**

The participants at the wildlife discussion group meeting described a typical trophy hunting wildlife production unit in the Southern Cape region as a 300 hectares unit under natural vegetation. This typical unit houses 12 bontebok, 12 common reedbuck and 20 nyala. Two permanent workers are appointed on such a unit.

The composition of herds and production performance of the different species on the unit are approximately the same. Two thirds of the flock are ewes. The natality rate is 30%, weaning percentage 60% and mortalities 10%. One male animal of each species per year is hunted for its trophy. The price for one bontebok is R9 000, reedbuck is hunted for R5 000 and nyala has a trophy hunting value of R12 000.

Nyala is supplied with supplementary feeding of R1 800 per annum, whereas veterinary and medicine cost R2 000 per annum for this species. Medicine for bontebok cost about R800 per animal. No directly allocatable costs are applicable to the reedbuck enterprise. Sundry expenses for the wildlife enterprise amount to R4 300, which include immediate replacement of broken crockery as well as bedding that needs to be replaced every three years. The self-catering units can accommodate 16 persons per night and are available to eco-tourists at R400 per person per night. These units are not available during holidays, but are utilised about 57 days per year (over weekends and long-weekends), with an occupancy rate of 50%. Wildlife producers are also business men with other income sources besides wildlife production.

Fixed improvements typical to such a trophy hunting wildlife production unit is one farm house (non-farm fixed improvement), two worker houses, four self-catering accommodation units, one store, two earth dams and fences on the outside borders of the unit (refer to Table 5.2). This unit possess about seven kilometres of wildlife fencing at a value of R60 000 per kilometre. It was mentioned that an old milking parlour is also on the farm, but it is in such dreadful condition that it bears no value. This typical unit will only possess one double cab vehicle and one tractor.

Again, depreciation for fixed improvements and the vehicles was calculated on the straight-line method, while the depreciation for the tractor and trailer was calculated using the reducing-balance method as suggested by Van Zyl (1999). Half of the expected lifetime was used as current age to calculate the accumulative depreciation and therefore the present value of the typical system.

**Table 5.2: Inventory of land, fixed improvements and moveable assets on the typical trophy hunting unit in the Southern Cape region**

<b>Inventory of typical trophy hunting unit</b>	<b>Present value (R)</b>
<b>Land</b>	
Market value for land and fixed improvements	3 535 000
Market value for bare land (300 ha @ R10 000/ha)	3 000 000
<b>Fixed improvements</b>	<b>535 000</b>
Worker houses (2 houses)	59 500
Accommodation (4 units)	200 000
Store	25 000
Earth dam (2 dams)	100 000
Wildlife-proof fences	210 000
<b>Moveable assets</b>	<b>157 768</b>
Double cab vehicle	125 000
Tractor	32 768

Wildlife producers indicated that debt on this typical trophy hunting system will consist of a long-term loan of R500 000 at an interest rate of 10.5%, payable over 10 years. Because of the already poor financial position of this typical system, they did not insist on any return to own management. It is, however, unrealistic to accept that anyone would be satisfied to work for free and, in fact, a value should have been allocated here.

## **5.2 EVALUATION OF TYPICAL WILDLIFE PRODUCTION SYSTEMS**

The biltong hunting and trophy hunting typical wildlife production systems are evaluated by means of a financial analysis, determining the growth, strength and financial position of the system; a diagnostic analysis, addressing factors that are responsible for the efficiency levels in the different enterprises; and a financial sustainability analysis, addressing sources and utilisation of funds.

### **5.2.1 Financial analysis**

The two typical systems are financially analysed by comparing the absolute measures: gross value of production, gross margin and net farm income; as well as the financial ratios: farm profitability, return on own capital, net capital ratio, leverage ratio, own capital ratio, capital turnover ratio, total cost ratio and the debt servicing ratio.

#### **5.2.1.1 Absolute measures**

The total gross value of production (the sum of the gross value of production of all enterprises on the unit) for the Beaufort West biltong hunting typical system is R677 454. The total gross value of

production of the whole unit consists of the three main enterprises: crops, livestock and wildlife with a total gross value of production of R60 000, R347 434 and R270 020 respectively. The total farm gross margin (the sum of the gross margin of all enterprises on the unit) for this system is R636 749 (refer to Table 5.3), which means that the directly allocatable variable costs do not have a large impact, as these costs are relatively low.

**Table 5.3: Comparison of financial performance between the two typical hunting systems in the Western Cape Province**

<b>Absolute measures</b>	<b>Typical biltong hunting system (R)</b>	<b>Typical trophy hunting system (R)</b>
<b>Total farm gross margin</b>	<b>636 749</b>	<b>190 700</b>
Total crop gross margin	57 840	0
Total livestock gross margin	308 889	0
Total wildlife gross margin	270 020	190 700
<b>Overhead costs<sup>a</sup></b>	<b>438 969</b>	<b>205 617</b>
<b>Variable costs (non-directly)</b>	<b>177 580</b>	<b>44 000</b>
Fuel, oil & lubricants	75 000	18 000
Repairs & spares (vehicles & machinery)	40 000	8 000
Electricity	36 000	18 000
Casual labour	900	0
Variable costs in respect of sundry farm income	0	0
Other	25 680	0
<b>Fixed costs</b>	<b>261 389</b>	<b>161 617</b>
Depreciation on fixed improvements, vehicles and machinery	128 717	82 417
Insurance on fixed improvements, vehicles & machinery	24 000	7 800
Licenses	1 672	600
Regular labour (foreman & workers)	87 000	40 800
Repairs: fixed improvements	20 000	30 000
Sundry	0	0
<b>Net farm income</b>	<b>197 781</b>	<b>(14 917)</b>
<b>External factor costs</b>	<b>18 625</b>	<b>52 500</b>
Rent and share crop payments	0	0
Interest and finance charges	18 625	52 500
Hired management	0	0
<b>Farm profit or loss</b>	<b>179 156</b>	<b>(67 417)</b>
<b>Own production factor costs</b>	<b>1 644 996</b>	<b>0<sup>b</sup></b>
Return to own management	240 000	0
Return on own capital	1 404 996	0
<b>Innovator's profit or loss</b>	<b>(1 465 840)</b>	<b>(67 417)</b>

Footnote: a. Although the typical trophy hunting system only has one enterprise and all costs therefore are allocatable, these costs are reflected here with the purpose of comparing the two systems to each other.

b. In actual practice, a figure should have been assigned here for own production factor costs (which mean that there should have been figures for the return to own management and return to own capital), in which case the profitability of this typical system would be even worse.

For the lucerne enterprise on this unit, directly allocatable variable costs consist of fertiliser, herbicides and packing material. For the sheep enterprise, directly allocatable variable costs include farm produced feed, veterinary and medicine, contract work, packing material, marketing cost and transport. No directly allocatable variable costs are present for the wildlife enterprise.

When looking at the net farm income, which was calculated as R197 781, however, it is clear that overhead costs take their toll on this typical unit. Overhead costs include variable costs and fixed costs (refer to Table 5.3).

The total gross value of production for the Southern Cape trophy hunting system (R204 100) also does not differ much from the total farm gross margin of R190 700. Again, the directly allocatable variable costs, which include veterinary and medicine, replacement of damaged crockery and bedding as well as supplementary feeding, do not have a large impact, but the overhead costs have such a large impact, that this typical trophy hunting system ends up with a negative net farm income of –R14 917 (refer to Table 5.3). The same overhead costs incurred on the biltong hunting unit are applicable to this unit.

Gross margins<sup>8</sup> are used to compare different enterprises to each other. The total farm gross margin of the typical biltong hunting system (R636 749) is much higher than that of the typical trophy hunting system (R190 700).

Without any further analyses, just by looking at the net farm income of the separate units, it is already clear that the typical biltong hunting unit in Beaufort West region is in a better financial position than the typical trophy hunting unit in the Southern Cape region.

#### **5.2.1.2 Financial ratios**

Although the net farm income already gives a good indication of the financial performance of a typical unit, it is however important to further analyse the financial ratios. The results of the financial ratios are summarised in Table 5.4, and discussed below.

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<sup>8</sup> Also sometimes referred to as “margin above specified costs”

**Table 5.4: Comparison of financial analysis results between the two typical systems in the Western Cape Province**

Results of financial analysis	Typical biltong hunting system: Beaufort West	Typical trophy hunting system: Southern Cape
<b>Profitability ratios</b>		
Farm profitability	1.41%	-0.36%
Return on own capital	-0.40%	-1.90%
<b>Solvency ratios</b>		
Net capital ratio	64.64 : 1	7.43 : 1
Leverage ratio	0.02 : 1	0.16 : 1
Own capital ratio	0.98 : 1	0.87 : 1
<b>Efficiency ratios</b>		
Capital turnover ratio	0.05 : 1	0.05 : 1
Total cost ratio	0.74 : 1	1.35 : 1
<b>Debt ratios</b>		
Debt servicing ratio	0.10 : 1	0.41 : 1

## Profitability

Profitability is the percentage relationship between profit made during a certain time period and the capital invested in order to realise that profit. It therefore indicates the profitability of the farm business and represents the interest earned on capital for a certain period, which can be compared to interest earned on other investment opportunities (Van Zyl *et al.*, 1999).

Farm profitability is a valuable tool to compare farms with each other, no matter whether the land is owned or rented or whether the farm is managed by the owner or an appointed manager (Van Zyl *et al.*, 1999). The farm profitability calculated for the typical biltong hunting system (refer to Table 5.4) is 1.41%, which indicates that the system earned a net farm income of R1.41 per R100 total capital employed. Because of the negative net farm income of the typical trophy hunting system, its farm profitability is -0.36%, which means for every R100 of total capital employed, 36 cents were wasted.

Return on own capital is another way of measuring profitability. This ratio gives an indication of the interest earned, by the farmer, on own capital, after borrowed capital has been serviced (Van Zyl *et al.*, 1999). The return on own capital of the typical biltong hunting system is -0.40% (refer to Table 5.4), which means that a farm loss of 40 cents was made per R100 own capital employed in the system. The fact that the return on own capital is lower than the farm profitability, is an indication of a negative financial leverage, and that the wildlife producer on the typical biltong hunting system will have to use own capital to meet interest and rental obligations. Due to a farm loss of R67 417, experienced by the typical trophy hunting system, the return on own capital is a negative -1.90%,



which means that a loss of R1.90 has been made for every R100 of own capital employed in the system.

When looking at these ratios from an investor's viewpoint, it could be argued that it might be better to rather invest your money at a financial institution at, for instance, 12% interest per annum. It is, however important to keep in mind that the land could appreciate in value and therefore has a certain investment value. Although this investment value will only realise at the time when the land is sold, it should be taken into account. Also, the non-financial benefits that may arise should not be forgotten.

## **Solvency**

Solvency indicates the level at which the assets of a business cover its liabilities and therefore the ability to meet its responsibilities after a possible termination of operations. The higher the risk in the business, the greater should be the amount by which its assets exceed its liabilities (Van Zyl *et al.*, 1999). A detailed analysis of solvency of these typical units should be done with caution, as values for assets and liabilities were directly asked from the wildlife producers, and could not be calculated from finer details. The ratios are, however, discussed below.

The net capital ratio indicates whether outstanding debt will be covered after all assets have been sold. The net capital ratio for the typical biltong hunting system is 64.64 : 1 (refer to Table 5.4) and can be interpreted as follows: for every R64.64 invested in the system, outside or loan capital to the value of R1.00 is used. The assets in the system are therefore 64.64 times more than the liabilities which imply that this system is in a favourable solvency position. The reason for this high ratio is the large value of the land (R11 107 800), which increase the value of total assets. The total liabilities, however, only amount to R217 372. No outstanding debt on this land remains. With such a high ratio, however, taking out more loan capital could be considered, with the intention of increasing profits. The net capital ratio for the typical trophy hunting system is 7.43 : 1, which is a healthy figure. For every R7.43 invested, R1.00 of outside capital is used.

The leverage ratio indicates the farmer's ability to cover total debt from own capital (Van Zyl *et al.*, 1999). In the typical biltong hunting system, for every R1.00 in own capital contributed, only two cents in outside capital has been invested, while in the typical trophy hunting system, for every R1.00 in own capital contributed, 16 cents in outside capital has been invested. Both these typical systems has a leverage ratio smaller than 1 : 1, which is a favourable ratio, since it is not advisable to owe more than the amount of own capital that was contributed.

The mirror image of the leverage ratio is the own capital ratio, which points out the relationship between own contribution and total assets of the farm business (Van Zyl *et al.*, 1999). For every R1.00 invested in the typical biltong hunting system, R0.98 is contributed by the wildlife producer from own capital. In the typical trophy hunting system, for every R1.00 invested in the system, R0.87 is contributed by the wildlife producer from own capital. An own capital ratio of at least 0.50 : 1 is advisable for a financially healthy business, and both the typical biltong hunting and trophy hunting systems are therefore healthy in this regard.

The solvency for both the typical systems is favourable, as any outstanding debt can easily be covered by assets or own capital. The solvency ratios are even healthy enough for a high risk business.

### **Liquidity**

Liquidity gives an indication of the ability of a farm business to timeously meet all current liabilities that are crucial for the future existence of the business. Liquidity therefore refers to the ratio of inflow to outflow of funds in the short term. Liquidity ratios are static and reflect the situation at a certain point of time, whereas the cash-flow position of a business could change drastically at any time and is therefore dynamic (Van Zyl *et al.*, 1999). It would be ineffective to go into detail regarding the liquidity of the typical systems, since the amounts for assets and liabilities were directly asked from wildlife producers and could not be calculated from finer details. The negative net farm income of the typical trophy hunting unit is self-explanatory concerning liquidity.

### **Efficiency**

The purpose of calculating efficiency ratios is to determine to what extent resources are efficiently used. The capital turnover ratio, which indicates the efficiency of the use of capital in the farm business, for both the typical biltong and trophy hunting units is 0.05 : 1 (refer to Table 5.4). This means that for every R1.00 total capital employed; only R0.05 gross value of production was generated. The larger this ratio, the more productive the employment of capital is. This ratio is very low and capital is therefore not very efficiently employed. Generally speaking, however, agriculture and more specifically extensive production systems are known for low capital turnover ratios.

The total cost ratio show the portion of the gross value of production that is spend on costs. The total cost ratio for the typical biltong hunting system is 0.74 : 1, which means that R0.74 of every R1.00 gross value of production earned is allocated to costs within this system. This does not

leave much for private spending such as living costs or for profit. For the typical trophy hunting system, R1.35 is spent on total costs, for every R1.00 gross value of production earned. This explains the negative net farm income figure of –R14 917, since the expenditure in this system is more than the income produced.

## Debt ratios

The debt servicing ratio measures the extent to which the business can meet its debt responsibilities (Van Zyl *et al.*, 1999). The debt servicing ratio for the typical biltong hunting system is 0.10 : 1, which means that for every R1.00 income, there is a claim of R0.10 for debt redemption. This is a relatively low ratio and therefore it could be argued that financial pressure to maintain the current standard of living is not expected. However, the liquidity situation of the system also needs to be kept in mind. The typical trophy hunting system has a higher ratio and for every R1.00 income, there is a claim of R0.41 for the redemption of debt. More pressure, especially when considering the liquidity problems, can be expected to maintain the standard of living within this system.

### 5.2.2 Diagnostic analysis

The diagnostic analysis gives an indication of why and how the farm business performs financially in a certain way. This diagnostic analysis investigates some enterprise criteria, general criteria and investment criteria as well as the utilisation of labour.

#### 5.2.2.1 Enterprise criteria

The typical biltong hunting wildlife production system houses 77 large stock units of springbok, 28 large stock units of kudu and 17 large stock units of gemsbok. This adds up to a total of 122 large stock units of wildlife in this system. The livestock (sheep) that are farmed with are equivalent to 227 large stock units, giving a total number of large stock units in the system of 349 (refer to Table 5.5).

**Table 5.5: Number of large stock units on the two typical hunting systems in the Western Cape Province**

Typical hunting system	Whole farm	Livestock enterprise	Wildlife enterprise	Different species		
<i>Biltong hunting system</i>				<i>Springbok</i>	<i>Kudu</i>	<i>Gemsbok</i>
	349	227	122	77	28	17
<i>Trophy hunting system</i>				<i>Bontebok</i>	<i>Reedbuck</i>	<i>Nyala</i>
	22		22	4	3	15

The typical trophy hunting system contains four large stock units of bontebok, three large stock units of common reedbuck and 15 large stock units of nyala (refer to Table 5.5). The total number of wildlife contained in this system is 22 large stock units. This is also the total number of large stock units for the whole farm, as no livestock production occurs within this system.

On the typical biltong hunting unit, wildlife and livestock share the area. The livestock, however, is rotated to different areas on the unit, and utilise 20% of the total area at a time. The total stocking rate, which includes both livestock and wildlife results in 29 hectares per large stock unit, falling within the standard norms for the area; which ranges between 25 hectares and 36 hectares per large stock unit (refer to Table 5.5). Wildlife in the typical trophy hunting system are free to roam the entire area of 300 hectares, which results in a stocking rate of 14 hectares per large stock unit. This is more or less in line with the standard ecological capacity along the south coast.

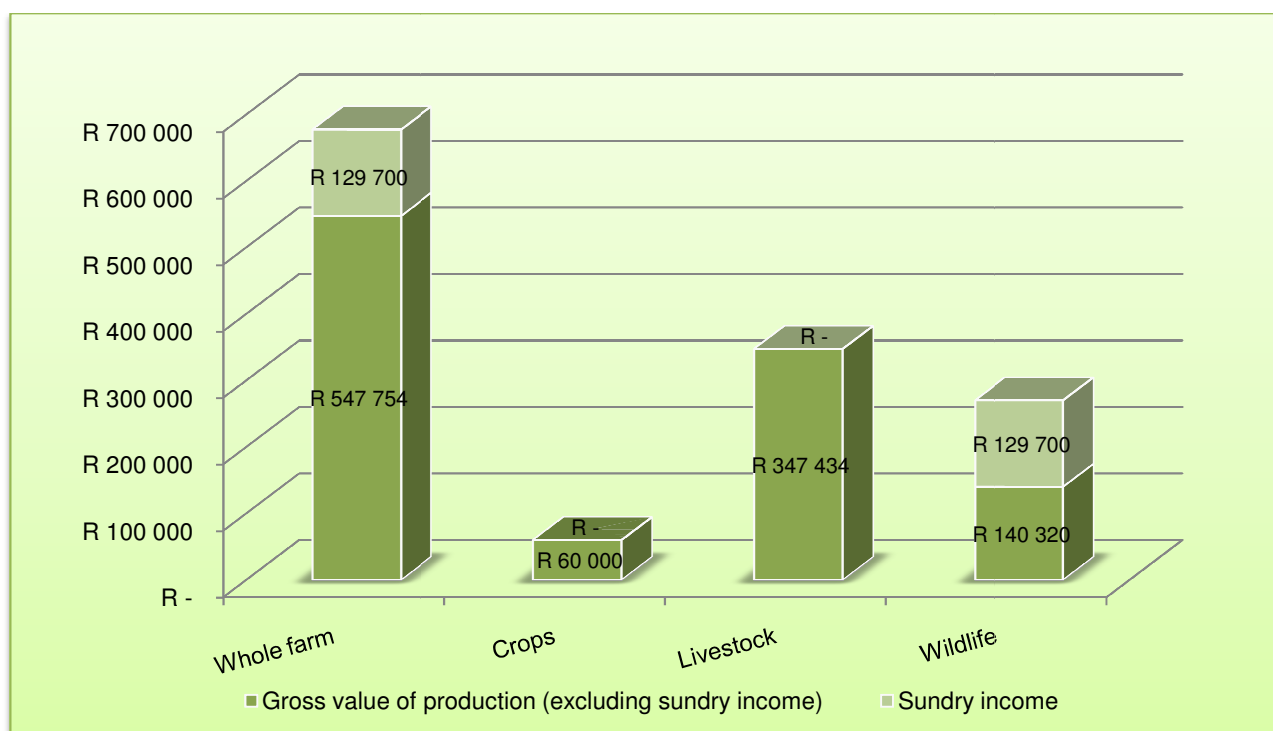
The natality in the biltong hunting system for the livestock is 85%, whereas the natality of the springbok, kudu and gemsbok are 68%, 100% and 85% respectively. The weaning percentage of kudu and gemsbok (both 90%) are high and therefore positively contribute to the profitability of the system. Apart from lambs or calves that died before they were weaned, no mortalities appear at the wildlife species. The livestock, however, has a mortality rate of 4%.

The natality of bontebok, common reedbuck and nyala (30% each) in the typical trophy hunting system is much lower than the natality of springbok, kudu and gemsbok in the typical biltong hunting system. This is probably why these species are scarcer. The weaning percentages (60% each) are also lower and the mortality rate (10% each) higher, which definitely has a negative impact on profitability.

#### **5.2.2.2 General criteria**

The total gross value of production for the whole typical biltong hunting wildlife production unit (R677 454) consists of the basic gross value of production (excluding the sundry income) of R547 754 and the sundry income of R129 700.

Sundry income in this typical system is mainly generated from accommodation fees and daily fees. The crop and livestock enterprises do not have any sundry income; whereas the sundry income in the wildlife enterprise is almost equal to the gross value of production directly from the different wildlife enterprises (refer to Figure 5.1).

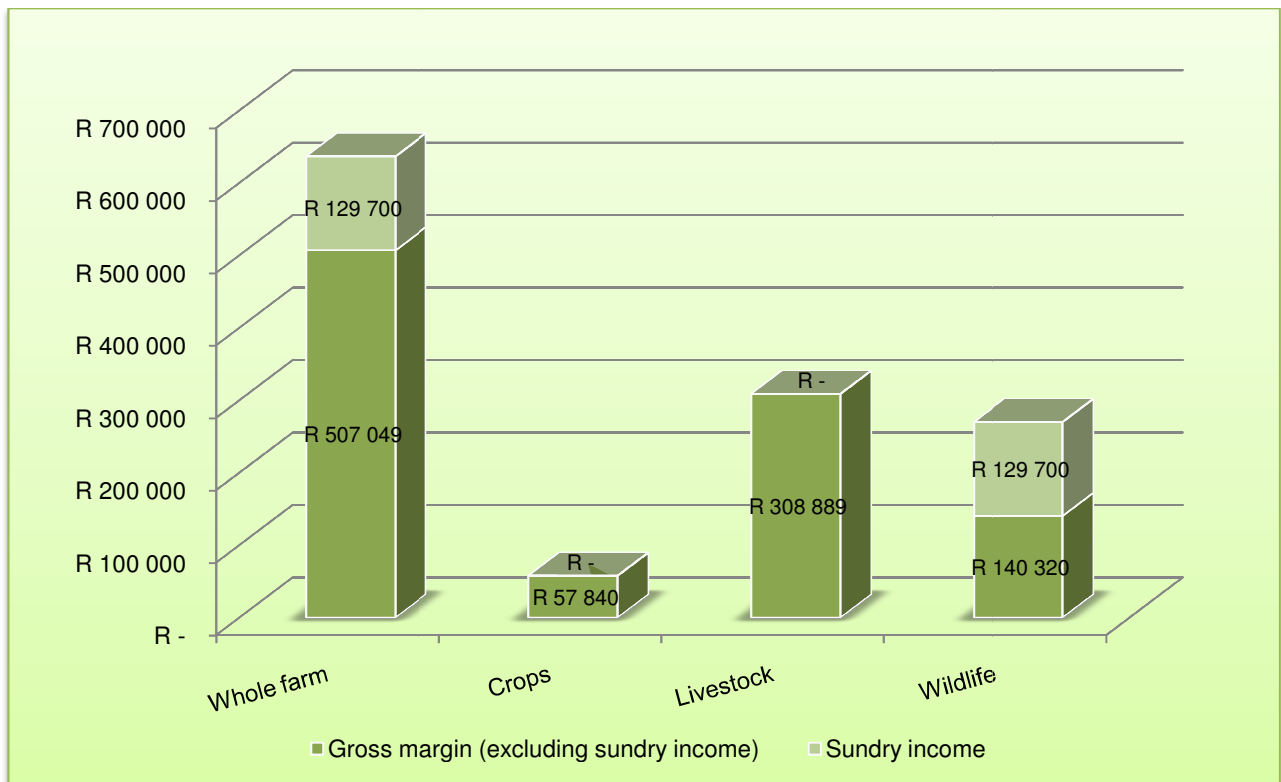


**Figure 5.1: Gross value of production of the different main enterprises in the typical biltong hunting system in the Beaufort West region**

The gross margin does not differ a lot from the gross value of production. This is due to the low amounts of directly allocatable variable costs within the different enterprises.

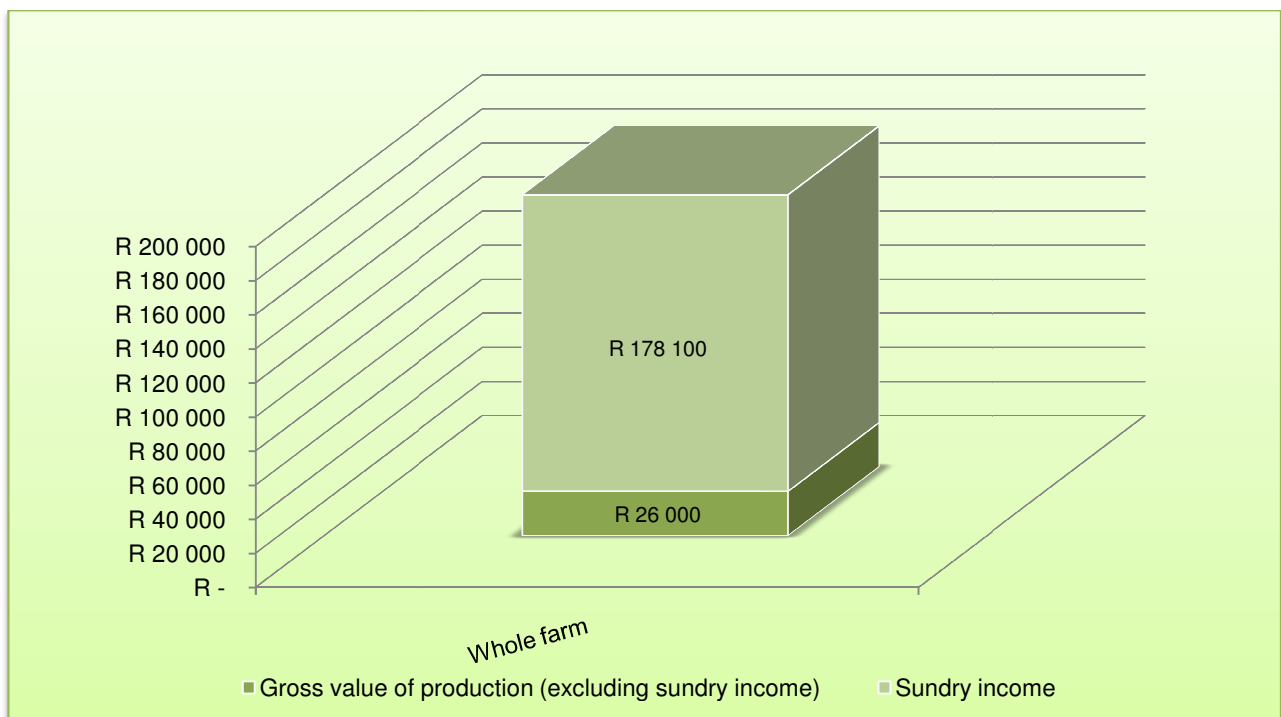
The total farm gross margin (for the whole wildlife production system) is R636 749. This amount includes the basic gross margin (excluding sundry income) of R507 049 as well as the sundry income of R129 700 (refer to Figure 5.2).

The gross margin for the wildlife enterprise (R270 020) is the same as the gross value of production for that same enterprise. This is because of the absence of directly allocatable variable costs. The gross margins for the crop and livestock enterprises is, however, slightly lower. The crop enterprise has a gross margin of R57 840 and the livestock enterprise has a gross margin of R308 889.



**Figure 5.2: Gross margin for the different main enterprises in the typical biltong hunting system in the Beaufort West region**

Figure 5.3 indicates the composition of the total gross value of production of the typical trophy hunting system.

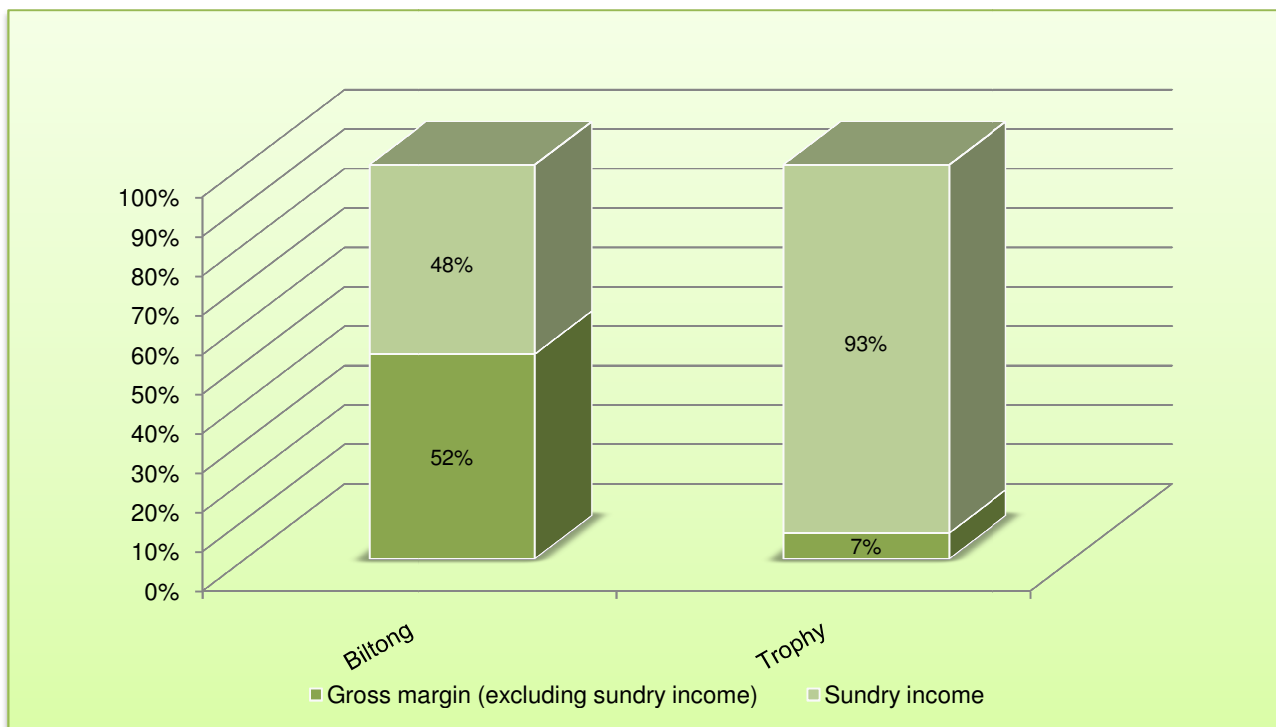


**Figure 5.3: Gross value of production and sundry income in the typical trophy hunting system in the Southern Cape region**

The wildlife enterprise is the only main enterprise in the typical trophy hunting system, as no crop or livestock enterprise exists within this typical trophy hunting system. The gross value of production (R204 100) and all other figures for the whole system are therefore the same as those of the wildlife enterprise. In this typical system, again there is sundry income together with the gross value of production. The sundry income (R178 100) this time is more than six times the gross value of production that was generated by the separate wildlife enterprises (refer to Figure 5.3). Sundry income in this typical system is generated from accommodation fees.

The gross margin of the typical trophy hunting system differs slightly from the gross value of production of this same system. The total farm gross margin is R190 700, consisting of R12 600 gross margin as well as the R178 100 sundry income.

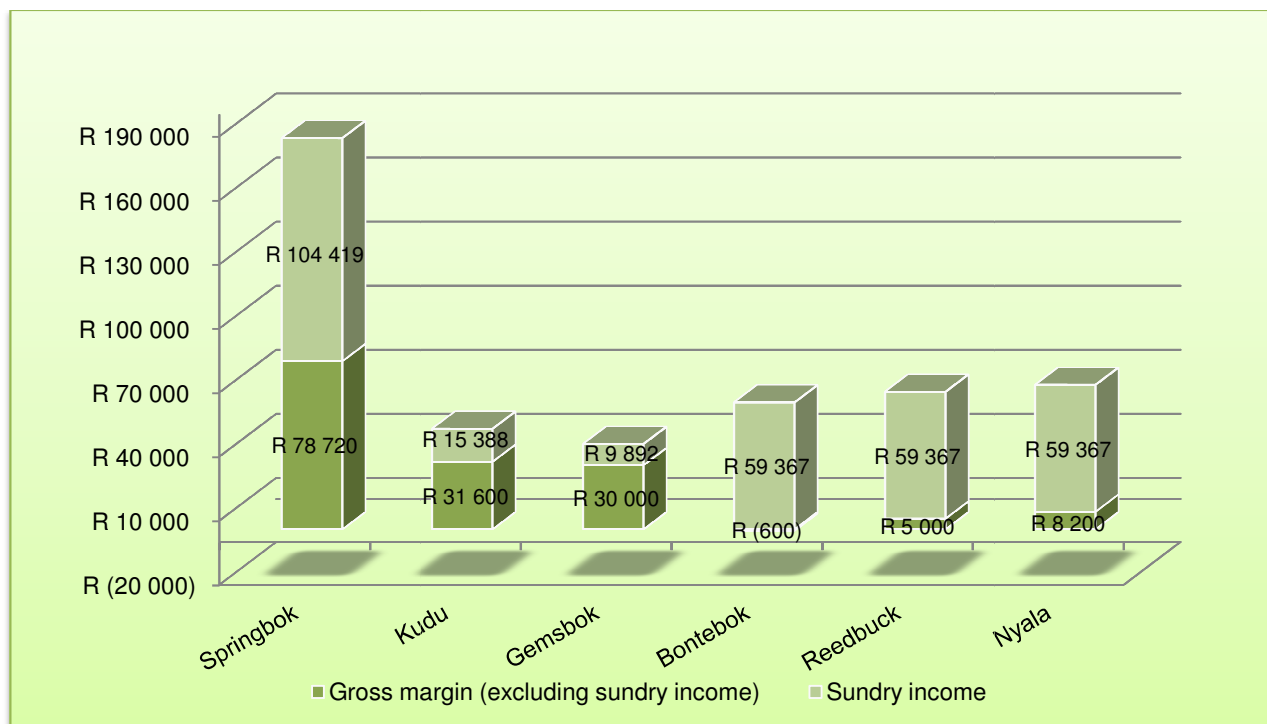
In Figure 5.4, the main wildlife enterprises of the typical biltong and trophy hunting systems are compared to each other. The total farm gross margin (including the sundry income) of the biltong hunting system is R270 020 and that of the trophy hunting system is R190 700.



**Figure 5.4: Composition of the total farm gross margin of the main wildlife enterprises of the typical biltong and trophy hunting systems in the Western Cape Province**

In this figure, it is clear that sundry income plays a significant role especially in the trophy hunting system, as 93% of the gross margin consists out of sundry income. In the typical biltong hunting system, 48% of the gross margin consists of sundry income.

In Figure 5.5 below, the gross margins of the different wildlife enterprises are compared to determine which of these enterprises are more profitable.



**Figure 5.5: Comparison of gross margins of the different wildlife enterprises on two typical wildlife production units in the Western Cape Province**

The basic gross margin of the common reedbuck (R5 000) and nyala (R8 200) enterprises are extremely low and the basic gross margin for bontebok even are negative (–R600). This is mainly because of the fact that only one animal per species per annum is hunted for its trophy in this system. When sundry income from accommodation is added, however, all three of these wildlife species has a higher gross margin than kudu and gemsbok in the biltong hunting system.

The springbok enterprise in the typical biltong hunting system has the highest gross margin in both typical systems. Its basic gross margin of R78 720 even exceeds the total gross margin of each of the other wildlife enterprises. The springbok enterprise is also the only wildlife enterprise within the typical biltong hunting system in which the sundry income is more than the basic gross margin.

Sundry income (SI), basic gross margin (BGM) and gross margin (GM) for the typical biltong hunting system are further analysed in Table 5.6. The basic gross margin is the gross margin generated from that specific wildlife species and without the inclusion of any sundry income. The gross margin is the total after sundry income was allocated and added to each enterprise.



**Table 5.6: Analysis of general criteria in different enterprises of the typical biltong hunting system in the Beaufort West region**

General criteria	Whole farm (R)	Livestock (R)	Wildlife (R)	Springbok (R)	Kudu (R)	Gemsbok (R)
<b>Basic gross margin</b>	<i>507 049</i>	<i>308 889</i>	<i>140 320</i>	<i>78 720</i>	<i>31 600</i>	<i>30 000</i>
BGM per ha	51	31	14			
BGM per LSU	1 453	1 361	1 150	1 022	1 129	1 765
BGM per breeding female		441		197	878	1 304
BGM per animal marketed		1 111	600	373	2 257	3 333
<b>Sundry income</b>	<i>129 700</i>		<i>129 700</i>	<i>104 419</i>	<i>15 388</i>	<i>9 892</i>
SI per ha	13		13			
SI per LSU	372		1 063	1 356	550	582
SI per breeding female				261	427	430
SI per animal marketed			554	495	1 099	1 099
<b>Gross margin</b>	<i>636 749</i>	<i>308 889</i>	<i>270 020</i>	<i>183 139</i>	<i>46 988</i>	<i>39 892</i>
GM per ha	64	31	27			
GM per LSU	1 824	1 361	2 213	2 378	1 678	2 347
GM per breeding female		441		458	1 305	1 734
GM per animal marketed		1 111	1 154	868	3 356	4 432

Basic gross margin of R50.70 per hectare is generated by the typical biltong hunting system. Together with the additional sundry income per hectare of R12.97, the gross margin of the total wildlife production system is R63.67 per hectare (refer to Table 5.6). The crop enterprise is earning R28 920 gross margin per hectare, but its purpose is to feed the animals during times of drought. Although the gross margin for the livestock enterprise is larger than the gross margin for the wildlife enterprise, it does not mean that this is the most profitable species. The number of animals in the livestock enterprise is significantly more than the number of animals in the wildlife enterprises, which causes the gross margin to be higher. Gross margin per large stock unit is a consistent way of comparing different enterprises to one another, because the difference in the number of animals within the different species does not influence the results.

The basic gross margin per large stock unit for the livestock enterprise in this typical hunting system is R1 360.75, which is higher than the R1 150.16 per large stock unit of the wildlife enterprise. When the sundry income of R1 063.11 is added, however, the gross margin per large stock unit of the wildlife enterprise (R2 213.28) is higher than that of the livestock enterprise (R1 360.75). The springbok enterprise has the largest gross margin per large stock unit of R2 378.43 (refer to Table 5.6). The gross margin per breeding female for each of the wildlife species is higher than the gross margin per breeding female for the livestock enterprise, with gemsbok having the highest gross margin per breeding female (R1 734.45).

The wildlife producers at the wildlife discussion group meeting stated that if the money earned for one wild animal hunted does not match the money earned for one sheep sold, it is not worth it to

house wildlife on the production unit. In such a case it would be better to replace wildlife with more sheep. In this table, however it is clear that wildlife do match up with livestock as the gross margin per wild animal marketed (R1 153.93) is slightly higher than the gross margin per livestock animal marketed (R1 111.11). The combination of wildlife species is important as the gross margin of springbok alone does not match the gross margin for the sheep. Wildlife producers, however, mentioned that springbok should generate between R600 and R750 per animal hunted, to be worth keeping them. Since springbok generate R868 per animal hunted in this typical system, it is worth keeping them.

The typical trophy hunting system, with its basic gross margin per hectare of R42 and its gross margin of R635.67 per hectare, also has a large contribution from sundry income. Because this is a smaller unit (300 ha) than the typical biltong hunting unit (10 000 ha), the gross margin per hectare is significantly higher (refer to Table 5.7).

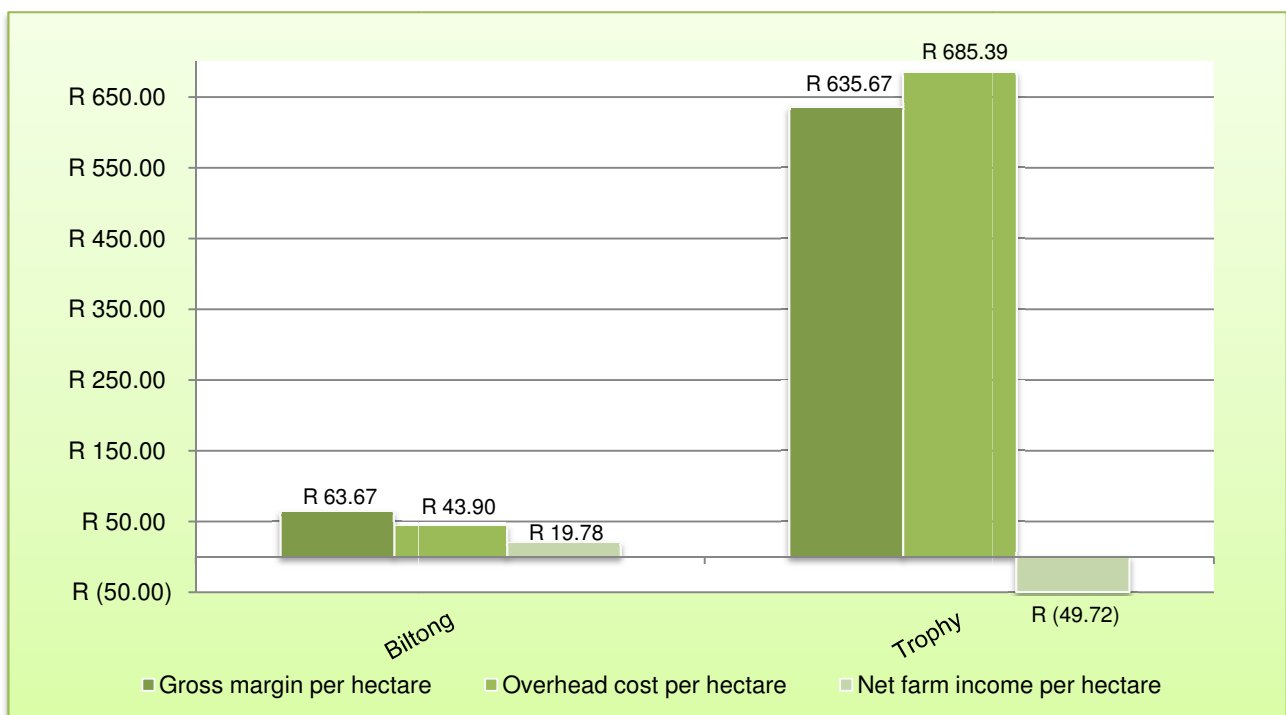
**Table 5.7: Analysis of general criteria in different enterprises of the typical trophy hunting system in the Southern Cape region**

General criteria	Wildlife (R)	Bontebok (R)	Reedbuck (R)	Nyala (R)
<b>Basic gross margin</b>	12 600	(600)	5 000	8 200
BGM per ha	42			
BGM per LSU	573	(150)	1 667	547
BGM per breeding female		(75)	625	631
BGM per animal marketed	4 200	(600)	5 000	8 200
<b>Sundry income</b>	178 100	59 367	59 367	59 367
SI per ha	594			
SI per LSU	8 095	14 842	19 789	3 958
SI per breeding female		7 421	7 421	4 567
SI per animal marketed	59 367	59 367	59 367	59 367
<b>Gross margin</b>	190 700	58 767	64 367	67 567
GM per ha	636			
GM per LSU	8 668	14 692	21 456	4 504
GM per breeding female		7 346	8 046	5 197
GM per animal marketed	63 567	58 767	64 367	67 567

The basic gross margin per large stock unit of R572.73 is lower than the basic gross margin of the wildlife enterprise in the typical biltong hunting system (R1 150.16). After sundry income was allocated and added, however, the gross margin per large stock unit of the wildlife enterprise in the typical trophy hunting system (R8 668.18 per LSU) exceeds the gross margin per large stock unit of the wildlife enterprise in the typical biltong hunting system (R2 213.28 per LSU) by far. The species with the highest gross margin per large stock unit is the common reedbuck (R21 455.56). It has to be considered, though, that the number of animals within this species is less than the number of animals within the other two species and that sundry income was allocated evenly.

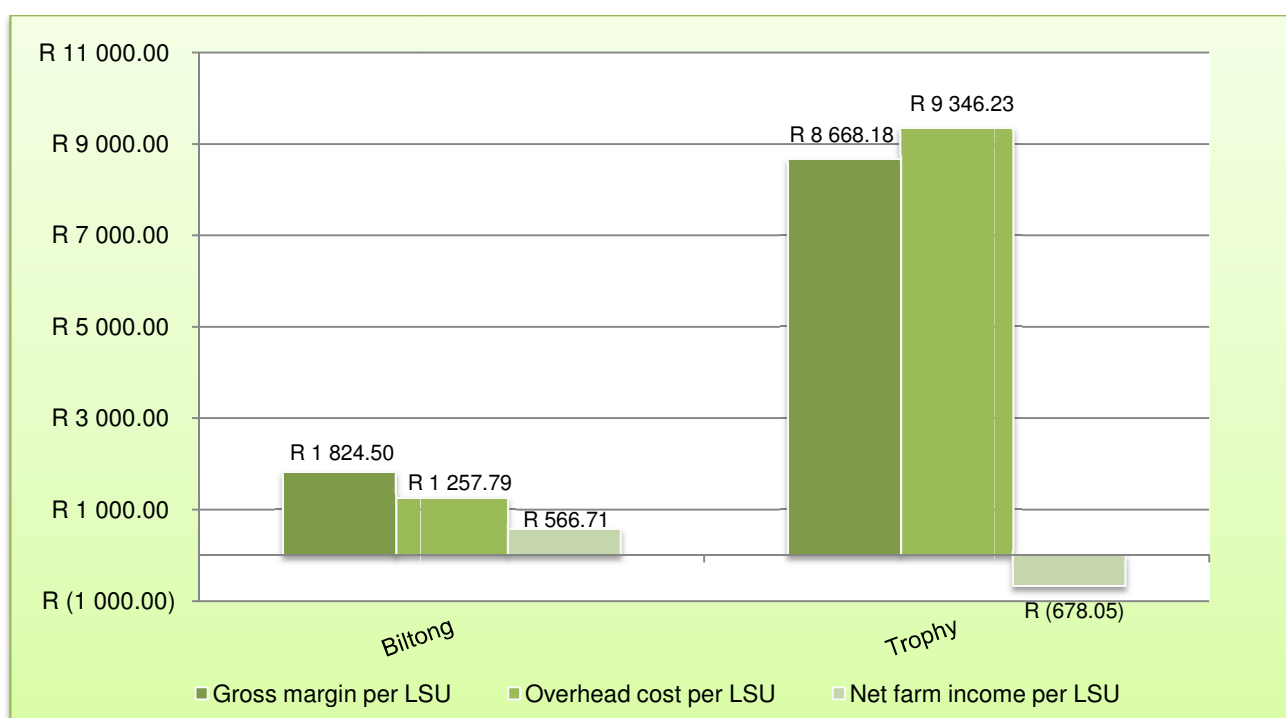
The gross margin per breeding female is the highest for bontebok and common reedbuck and the gross margin of the wildlife enterprise in the typical trophy hunting system is R63 566.67 per animal marketed. This exceeds the gross margin of the wildlife enterprise on the biltong hunting system (R1 153.93) by far. Even with such high figures, the typical trophy hunting system runs at a loss. The small number of animals does not allow more animals to be hunted for trophies. A larger number of animals, and also a wider variety of species, will attract more tourists and therefore more income from accommodation can be expected. The high overhead costs in this typical system also take its toll. It is highly unlikely to carry overheads with only 22 large stock units – even in more profitable systems.

The gross margin per hectare for the typical trophy hunting system of R635.67 is exceeded by the systems overhead cost per hectare of R685.39 (refer to Figure 5.6). This explains the negative net farm income made by the typical trophy hunting system. The typical biltong hunting system has an overhead cost per hectare of only R43.90. It is, however, close to 70% of the gross margin per hectare of this system, leaving only R19.78 net farm income per hectare.



**Figure 5.6: Comparison of overhead cost per hectare, gross margin per hectare and net farm income per hectare for two typical hunting systems in the Western Cape Province**

The same effect is experienced when the gross margin, overhead costs and net farm income is expressed per large stock unit. In the typical biltong hunting system, the overhead cost per large stock unit (R1 257.79) is 69% of the value of gross margin per large stock unit (R1 824.50), leaving a mere R566.71 net farm income per large stock unit (refer to Figure 5.7).



**Figure 5.7: Comparison of gross margin per LSU, overhead cost per LSU and net farm income per LSU for two typical hunting systems in the Western Cape Province**

The typical trophy hunting system has an overhead cost per large stock unit of R9 346.23. This amount exceeds the amount for the gross margin per large stock unit, which result in a negative net farm income of –R678.05 per large stock unit.

### 5.2.2.3 Investment criteria

Investment criteria include investment figures expressed per hectare or per large stock unit after which comparisons can be made between different production systems. The land value per hectare for the typical biltong hunting system is R1 110.78; whereas the typical trophy hunting system has a land value per hectare of R10 000 (refer to Table 5.8). Land in regions with a low ecological capacity has a lower value per hectare. The typical biltong hunting system in Beaufort West has a much lower ecological capacity than the typical trophy hunting system in the Southern Cape.

**Table 5.8: Analysis of investment criteria in both the typical hunting systems in the Western Cape Province**

Investment criteria	Biltong hunting system (R)	Trophy hunting system (R)
Land value per ha	1 110.78	10 000.00
Value of fixed improvements per ha	145.35	1 981.67
Value of wildlife per ha	44.02	1 176.67
Capital investment in moveable assets	341 655.22	157 768.00
Capital investment in wildlife per LSU	3 608.20	16 045.45
Capital investments per LSU	40 257.75	186 603.09

The value of fixed improvements is R145.35 per hectare in the typical biltong hunting system and R1 981.67 in the typical trophy hunting system. When taking a look at the value of wildlife per hectare, it is clear that the value of wildlife species in the typical trophy hunting unit is much larger than the value of wildlife species in the typical biltong hunting system. The species in the typical trophy hunting system are scarcer and therefore have a higher monetary value. The total capital investment in moveable assets for the biltong hunting system is R341 655.22; whereas the total capital investment in moveable assets in the trophy hunting system is more or less half of that.

Because of the higher monetary value of the species in the trophy hunting system, the higher capital investment in wildlife per large stock unit in this system was expected. Total capital investment per large stock unit is R40 257.75 and R186 603.09 for the biltong hunting system and trophy hunting system respectively.

#### **5.2.2.4 Utilisation of labour**

The typical biltong hunting system has five permanent workers and makes use of one casual worker. No manager or foreman is appointed and seasonal labour is not applicable to the production activities in this system. At the time of data collection (in the previous financial year), the permanent workers earned a salary of R1 450 per person per month, whereas the casual worker was paid R60 per day and was used for a total of 15 days throughout the year. Minimum wage for the current (2010/2011) financial year for farm workers is set at R6.74 per hour or R1 316.69 per month (WageIndicator Foundation 2011). If a casual worker worked for eight hours, the amount earned is R7.50 per hour, which is more than the current minimum wage. The same applies for the salary paid per month. All of the permanent workers are working on all enterprises in the typical biltong hunting system, but 65% of their time is allocated to the livestock enterprise, 20% to the wildlife enterprise, 5% to the crop enterprise and the rest of their time is allocated to other work that is not for a certain enterprise specifically. The casual worker is utilised within all the enterprises.

The highest education of permanent workers employed in the typical biltong hunting system, is primary education. When these workers were initially appointed, they had no experience or specific skills in the field of work. They now have 10 to 15 years' experience in their field of work and their knowledge of nature includes plants, veld condition and animal behaviour. They are highly skilled in handling and caring for the sheep and wild animals. Their tracking and slaughtering skills, applied in the wildlife enterprise, are very good. They can now ride motorbikes and ride on horses in order to fulfil their daily tasks and they are able to operate and repair machinery.

In the typical trophy hunting system, two permanent workers are employed, earning a salary of R1 700 per month, each. This is more than the minimum wage as described above. No manager, foreman or casual worker is employed and the production activities in this system do not require seasonal labour. The wives of the permanent workers earn R500 per month each, for cleaning the farm house during weekends.

The highest education qualification of the permanent workers in the typical trophy hunting system is also primary education. These workers were also appointed without having any experience or specific skills in the field of work. Today these men have 10 to 15 years of experience in their field of work and they have acquired a lot of skills during this time on the unit. They are able to operate the tractor and implements as well as the chain saw. Their slaughtering skills are of a good standard and they are rather nifty with their garden work.

The total labour cost per annum of R98 016.30 in the typical biltong hunting system was calculated by adding the wages, the annual depreciation on worker housing as well as the discount given on sheep sales. The total labour cost per annum of R43 775 for the typical trophy hunting system includes the wages paid to workers and the annual depreciation of worker housing. No wild animals are hunted for on-farm consumption by workers. The labour cost per permanent worker per month (refer to Table 5.9) for the typical biltong hunting system amounts to R1 633.61, which is R183.61 more than the wages paid per month.

**Table 5.9: Utilisation of labour in both the typical hunting systems in the Western Cape Province**

Utilisation of labour	Biltong hunting system (R)	Trophy hunting system (R)
Labour cost per permanent worker per month	1 633.61	1 823.96
Gross value of production per worker	109 550.74	102 050.00
Gross value of production per R100 labour cost	558.84	466.25
Net farm income per R100 labour cost	201.78	(34.08)

The gross value of production earned per worker is more or less the same for the two typical hunting systems, with R109 550.74 and R102 050 for the biltong hunting and trophy hunting systems respectively. In the typical biltong hunting system, R558.84 gross value of production is earned for every R100 spent on labour cost, whereas R466.25 gross value of production is earned for every R100 spent on labour cost in the typical trophy hunting system. Even with five workers in the typical biltong hunting system, compared to two in the typical trophy hunting system, the biltong hunting system is better-off in this respect. The typical biltong hunting system earns R201.78 net farm income for every R100 spent on labour. The typical trophy hunting system has a net farm income per R100 labour cost of –R34.08, meaning that for every R100 spent on labour, R34.08 was wasted.

### 5.2.3 Financial sustainability analysis

The ratio of debt to net farm income for the typical biltong hunting system is 1.10 : 1, which means that for every R1.00 net farm income earned the system owes R1.10 (refer to Table 5.10). Because of the negative net farm income of the typical trophy hunting system, this figure cannot be used. The typical biltong hunting system has debt of R21.74 per hectare and R622.84 per large stock unit, whereas the typical trophy hunting system has debt of R1 841.67 for every hectare of land and R25 113.64 for every large stock unit.

**Table 5.10: Debt analysis within both the typical hunting systems in the Western Cape Province**

Debt figures	Biltong hunting system	Trophy hunting system
Ratio Debt to Net farm income	1.10 : 1	-37.04 : 1
Debt per hectare	R 21.74	R 1 841.67
Debt per large stock unit	R 622.84	R 25 113.64

### 5.2.4 Comparisons with wildlife production systems described in the literature

The profitability of wildlife production systems elsewhere in the country, as described by ABSA (2003), is discussed in the literature review. Comparisons are drawn between the two typical hunting systems of this study and similar systems described in the literature review. In order to compare the profitability of those systems to the profitability of the typical wildlife production systems in this study, additional calculations were done and terminology as used by ABSA (2003) is used for the purpose of comparison.

The whole farm “net operating margin”<sup>9</sup> for the typical biltong hunting system is 43.07% (refer to Table 5.11), which means that for every R100 gross margin earned, R43.07 results in net farm income. In order to compare this with the other typical wildlife production systems, which do not

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<sup>9</sup> The “net operating margin”, is calculated by ABSA (2003) by expressing the “net operating profit” as a percentage of the “gross operating income”. The “gross operating income” relates to the correct agricultural economic term, “gross margin” as the directly allocatable variable costs are already deducted. The “net operating profit” relates to the correct agricultural economic term, “net farm income” as it is calculated by deducting the “gross operating expenditure” (“overhead costs” in correct agricultural economic terms) from the “gross operating income”. The “net operating margin” for the typical wildlife production systems was therefore calculated by expressing the net farm income as a percentage of the total farm gross margin (after allocation of variable costs). The “net operating margin” for the wildlife enterprise of the typical biltong hunting system was calculated by expressing the net farm income for the wildlife enterprise (after allocation of fixed costs) as a percentage of the gross margin of the wildlife enterprise (after allocation of variable costs). Costs were allocated according to the judgement of the wildlife producers that attended the wildlife discussion group meetings.

include livestock; it is also of value to calculate the “net operating margin” for the wildlife enterprise only. In this typical system, the wildlife producers indicated that 95% of costs (excluding casual labour and permanent labour costs) should be allocated to the livestock enterprise, whereas only 5% of costs should be allocated to the wildlife enterprise.

**Table 5.11: Ratios calculated for purposes of comparing the two typical hunting systems in the Western Cape Province**

Results of financial analysis	Typical biltong hunting system: Beaufort West	Typical trophy hunting system: Southern Cape
<b>Comparing ratios</b>		
“Net operating margin”: Wildlife	89.99%	-10.17%
“Net operating margin”: Whole farm	43.07%	-10.17%
“Return on capital invested”: Wildlife	1.76%	-0.36%
“Return on capital invested”: Whole farm	1.41%	-0.36%

Casual labour costs were indicated as being evenly spread between the three enterprises, while permanent labour costs had to be allocated as follows: 5% to the crop enterprise, 65% to the livestock enterprise, 20% to the wildlife enterprise and the remainder to other activities. The “net operating margin” for the wildlife enterprise in this system is therefore 89.99%, meaning that R89.99 out of every R100 gross margin generated, results in net farm income.

The whole farm “net operating margin” for the typical trophy hunting system is -10.17%, which means for every R100 gross margin generated, the system ends up with a net farm cost of R10.17. This is because of the loss made in this system. The typical trophy hunting system only has a wildlife enterprise, and no crop or livestock enterprises. The “net operating margin” for the wildlife enterprise would therefore be the same as the whole farm “net operating margin”.

The whole farm “return on capital invested”<sup>10</sup> for the typical biltong hunting system is calculated as 1.41% (refer to Table 5.11), which mean that for every R100 of capital employed, a net farm income of only R1.41 is generated. The “return on capital invested” for the wildlife enterprise in

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<sup>10</sup> The “return on capital invested”, as used by ABSA (2003), is calculated by expressing the “net operating profit” (“net farm income” in correct agricultural economic terms) as a percentage of the “capital investments” made. “Capital investments” include land and fencing, wildlife, buildings and infrastructure as well as vehicles. The “return on capital invested” for the typical wildlife production systems was therefore calculated by expressing the net farm income as a percentage of the total capital employed. It is therefore calculated in the same way as “farm profitability”. The “return on capital invested” for the wildlife enterprise of the typical biltong hunting system was calculated by expressing the net farm income for the wildlife enterprise (after allocation of fixed costs) as a percentage of the total capital employed. Investment in livestock is, however, deducted from the total capital employed. Again, costs were allocated according to the judgement of the wildlife producers that attended the wildlife discussion group meetings.



this typical system is a slightly higher 1.76%. The typical trophy hunting system has a “return on capital invested” of -0.36%, meaning that for every R100 of capital employed, R0.36 is wasted.

When comparing these typical wildlife production systems to other systems in the literature, it must be kept in mind that systems will differ from region to region. The large stock unit (LSU) capacity will also have an influence since the larger the unit, the more large stock units it is able to hold and the more profitable the system normally will be. Table 5.12 summarises the “net operating margin” and “return on capital invested” for hunting systems and livestock systems in different regions, with different large stock unit capacities.

**Table 5.12: Typical wildlife production systems in the Western Cape Province, compared with hunting and livestock production systems with different LSU capacities in different regions**

Hunting systems	“Net operating margin” (%)	“Return on capital” (%)	Livestock systems	“Net operating margin” (%)	“Return on capital” (%)
<b>Systems described in literature (1 000 LSU's)</b>					
Hunting: Grasslands	67.9	10.3	Cattle: Grasslands	33.9	4.8
Hunting: Lowveld	76.1	3.0	Cattle: Lowveld	33.3	0.9
Hunting: Bushveld	76.7	5.7	Cattle: Bushveld	33.2	1.9
Hunting: Kalahari	68.8	9.0	Sheep: Kalahari	40.7	7.0
Hunting: Karoo	58.9	8.3	Sheep: Karoo	40.0	7.2
<b>Systems described in literature (150 and 600 LSU's respectively)</b>					
Hunting: Grasslands	51.8	5.9	Cattle: Grasslands	20.9	2.4
Hunting: Grasslands	66.3	9.1	Cattle: Grasslands	28.4	3.7
<b>Typical hunting systems (349 and 22 LSU's respectively)</b>					
Biltong hunting: Beaufort West	43.1	1.4	Wildlife only:	89.9	
Trophy hunting: Southern Cape	-10.2	-0.4			

Source: Dry (2009) and ABSA (2003)

Because of the net farm loss made in the typical trophy hunting system, the “net operating margin” and “return on capital invested” are negative and are not comparable to the rest. Possible reasons for the situation of this system will be discussed later. The typical biltong hunting system compares well with the rest.

The “net operating margin” of the typical biltong hunting system in Beaufort West, of 43.07% might well be at the bottom end of all the hunting systems described in the literature, but they match up to the livestock systems (refer to Table 5.12). Bearing in mind that most of these systems have a capacity of 1 000 large stock units, the typical biltong hunting system in Beaufort West does not look bad. It should also be kept in mind that this system not only consists of wildlife, but also livestock. Seeing that this system has a large stock unit capacity of 122 large stock units for the wildlife enterprise, it can be compared to the hunting system in the Grasslands that has a capacity

of 150 large stock units. The 43.1% of this typical system is therefore not out of line. It is in an even better financial position than all the livestock production systems, despite the large capacities of most of these systems.

When looking at the “net operating margin” for the wildlife enterprise only (89.9%), it is clear that the wildlife activities contribute positively to this system. The “return on capital invested” of 1.4%; however does not even match the livestock production systems.

Keeping in mind that wildlife production systems in different regions and with different large stock unit capacities can differ, the gross margin per large stock unit, the overhead cost per large stock unit as well as the net farm income per large stock unit can be compared between systems. These measurements, expressed per large stock unit, are a good way to compare enterprises and production units of different sizes and with different numbers of large stock units.

Although the gross margin per large stock unit of the typical biltong hunting system (R1 824.50) is the lowest of all the hunting systems in the different areas (refer to Table 5.13), it is still higher than the highest livestock enterprise, namely sheep production in the Karoo with R1 625 gross margin generated per large stock unit (ABSA, 2003). It also compares well with the hunting system in the Karoo (R1 908.16 gross margin per large stock unit). These hunting systems, however, do not produce crops or livestock, and for this reason, one could compare it with the wildlife enterprise only, of the typical biltong hunting unit. The gross margin per large stock unit for the wildlife enterprise is R2 213.28, which is higher than the hunting unit in the Karoo, but still in line with the figures stipulated in the literature.

**Table 5.13: Gross margin, overhead costs and net farm income of typical hunting systems in the Western Cape Province, expressed per large stock unit, and compared with other hunting systems in different regions**

Hunting systems	Gross margin per LSU (R)	Overhead cost per LSU (R)	Net farm income per LSU (R)
<b>Systems described in literature (1 000 LSU's)</b>			
Hunting: Grasslands	2 286.82	734.81	1 552.01
Hunting: Lowveld	3 125.82	748.09	2 377.73
Hunting: Bushveld	3 220.36	751.80	2 468.56
Hunting: Kalahari	2 458.95	766.35	1 692.60
Hunting: Karoo	1 908.16	783.94	1 124.22
<b>Systems described in literature (150 and 600 LSU's respectively)</b>			
Hunting: Grasslands	1 905.49	918.09	987.39
Hunting: Grasslands	2 301.82	774.80	1 527.02
<b>Typical hunting systems (349 and 22 LSU's respectively)</b>			
Biltong hunting: Beaufort West	1 824.50	1 257.79	566.71
Trophy hunting: Southern Cape	8 668.18	9 346.23	(678.05)

Source: Dry (2009) and ABSA (2003)

The overhead cost per large stock unit of the typical biltong hunting system (R1 257.79), however, is much larger than the R783.94 overhead cost per large stock unit of the Karoo hunting system (refer to Table 5.13). This results in a net farm income of R566.71 per large stock unit for the biltong hunting system, which is much lower than the R1 124.22 net farm income per large stock unit for the Karoo hunting system. The overhead cost per large stock unit of the biltong hunting system is even larger than all the livestock production systems, the highest being cattle production (R1 012.99) with an equivalent of 150 large stock units in the Grasslands region (ABSA, 2003).

The net farm income per large stock unit of R566.71 is the lowest of all hunting systems mentioned in the literature. It is, however, better than all the cattle production systems, with the highest being the system with 150 large stock units in the Grasslands, with its net farm income per large stock unit of R434.38 (ABSA, 2003). Yet, in the Karoo region, where sheep production is the norm, a unit with sheep would do better than biltong hunting, by generating a net farm income per large stock unit of R650.60 (ABSA, 2003).

The typical trophy hunting system cannot really be compared to these figures, as these hunting units refer to biltong hunting units.

Total capital investment per large stock unit is R40 257.75 and R186 603.09 for the biltong hunting system and trophy hunting system respectively. If compared to the hunting units in the literature according to ABSA (2003), these figures are high. The highest value of capital invested per large stock unit for hunting units in this specific literature is R79 229.60 in the Lowveld. The Karoo hunting unit, situated in the same region as the typical biltong hunting unit, invested R13 624.57 in capital per large stock unit.

The typical biltong hunting system earns R201.78 net farm income for every R100 spent on labour cost. This figure is even lower than the same figure for most livestock production systems. The net farm income per R100 of labour cost for the sheep production unit in the Karoo is R448.69 and the hunting unit in the Karoo earns R775.33 of net farm income per R100 spent on labour cost (ABSA, 2003).

### **5.3 CRITICAL SUCCESS FACTORS**

Certain factors, which are critical to success, will influence the financial performance of a business in a direct or an indirect manner. The identification of these critical success factors is therefore of great importance. The critical success factors as identified by wildlife producers that attended the wildlife discussion group meetings are discussed below for both the typical hunting systems.

### **5.3.1 Critical success factors for the typical biltong hunting system**

The critical success factors influencing this typical system, according to wildlife producers, are mostly rain, business management, knowledge and own capital. Some challenges and problems are also experienced within this typical system.

In years of drought, livestock losses, a possible decrease in reproduction rate and the possibility of epidemics such as bluetongue disease, are threats that would negatively influence the financial performance of the unit. These droughts normally occur once in every five years. Wildlife producers usually manage the system in times of drought by reducing livestock numbers and cutting costs.

Business management is of the utmost importance as decisions to be made should be based on sound principles. The wrong decision could turn into catastrophic results. Wildlife producers also need to have very sophisticated and technical knowledge of the enterprises, especially the livestock and wildlife enterprises, on the unit. Furthermore wildlife producers are of the opinion that own capital is also a key success factor and that nothing more than 10% of total capital should be from outside sources.

Shrinking margins are a reality and therefore the possibility of taking out large bonds is out of the question. Livestock theft and “damage causing animals” are also a problem. The latter is a term used by DEAT (2006) and in this case refers mainly to animals that cause losses to livestock. Furthermore, legislation has a limiting impact on this system. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and Threatened or Protected Species (TOPS) regulations, as well as firearm legislation and the permit system causes problems, according to wildlife producers.

In spite of all the threats and challenges, the opportunity lies in the fact that there is a large demand for biltong hunting, because people enjoy it.

### **5.3.2 Critical success factors for the typical trophy hunting system**

According to the Southern Cape wildlife producers, legislation and limiting regulations in terms of species distribution as well as poor service delivery are the most critical factors that hamper success in this typical hunting system. Parasites also have a negative effect on success, but this factor is at least manageable. Even drought is not such a critical factor threatening success, since

supplementary feed, such as lucerne, can be supplied. Unfortunately, wildlife producers have no control when it comes to legislation.

The main challenge, according to wildlife producers in the typical trophy hunting system, is that legislation is hampering the wildlife industry in the Southern Cape region and this leaves them with a feeling of hopelessness. Because of regulations that limit the variety of species allowed in the region, the tourism as well as trophy hunting industries are held back. Tourists are generally attracted by a wide variety of species which they could view. It is not worthwhile travelling to an area where there are only a few species to be seen. Trophy hunters from overseas do not want to travel a lot. They prefer to fly to one place, where they hunt and from where they can return home. In the Southern Cape area, there are not enough different species available for trophy hunting, and it is not worthwhile for hunters to travel all the way to the Southern Cape and then only have a limited choice of species to hunt. The wildlife industry in the Southern Cape, for these reasons, is lifeless.

The typical trophy hunting unit in the Southern Cape currently covers a relatively small area and can accommodate only a limited number of large stock units, which do have a limiting influence on the profitability of such a unit. Because of the lifeless wildlife industry in the Southern Cape, wildlife producers do not even bother to put in their full weight and capacity to make a success out of the system. If a larger variety of species were allowed, and the wildlife industry in the Southern Cape could strengthen again, wildlife producers would put their full weight behind making a success of this system by covering their overheads and making some profit. As soon as it is successful, more land can be bought, which would allow a larger number of species to be stocked and therefore being available for hunting. This would have a positive impact on profitability.

Wildlife producers explained in detail the real problem that is caused by the legislation on species distribution. CapeNature, the government conservation authority in the Western Cape Province, implemented legislation that only allows wildlife species in an area that historically (about 300 years ago) occurred in that specific area. In contrast with this legislation, wildlife producers argue that in their experience, the mixture of the veld, the types of parasites and diseases as well as different types of small wildlife species that occur in the region, have changed in the last 300 years. They also noticed changes in the last few years.

Certain wildlife species that are allowed in the Southern Cape because of their occurrence in this region some 300 years ago, are not able to survive in this region anymore. The black rhinoceros, for example, is allowed in the Southern Cape region, but since the Renosterbos (amongst others), which occurred in the region some 300 years ago, does not occur there anymore, this food source of the rhinoceros is depleted and this species cannot survive on natural grazing land in this region

anymore. The Burchell's zebra, which historically occurred in the Southern Cape region, are not suitable for the region anymore because of the risk of horse sickness, which historically did not occur in the region. Three hundred years ago, ticks were no problem in this region, but today, Eland and red hartebeest die because of tick infections and heartwater, carried by the ticks. Springbok also die of heartwater. Buffalo and Cape mountain zebra are allowed in the region, but the downside is that these species requires a large capital investment, which cannot be afforded by everyone. Procurement is also accompanied by a lot of red tape. Elephant and lion are also allowed, provided that the land size is large enough to contain them. Unfortunately land sizes in the Southern Cape region are normally not large enough for these kinds of species.

Certain wildlife species that are well adapted to the Southern Cape region are not allowed, because they did not historically occur in this region. Nyala, for instance flourish in the Southern Cape, but are not allowed to be sold in the region. Livingstone eland has tolerance for ticks and tick-borne diseases and it adapts well to this region, but it did not occur here historically and therefore is not allowed. Bontebok do well in this area, but are only allowed in the Heidelberg region. Sable antelope and roan antelope *Hippotragus equinus* also prosper, but are not allowed.

Other species, however, which did not historically occur in the region but are not hindered by fences, today occur there. The presence of caracal and black-backed jackal, for example, which prey on grey rhebuck, historically did not occur within this region, but are now abundant. Together with the changes within nature, these species migrate to areas which best suit their needs. Parasites also have not been a problem in the past, but are now problematic.

According to wildlife producers, five years ago, the wildlife industry in the Southern Cape started to bloom, and was on its way to reaching new heights, when the new legislation and regulations were implemented. This action damaged the wildlife industry. Instead of managing their wildlife production units to its optimal capacity, with the objective to extend their land area in the near future, wildlife producers tend to leave and purchase wildlife production units that reside under the Eastern Cape government conservation authority, where such problems do not occur. Wildlife producers feel that the case is hopeless, unless radical legislation changes are implemented.

A lot of opportunities exist for the wildlife industry in the Southern Cape region. A greater number of wildlife production units and a wider variety of wildlife species would result in an increased number of visiting tourists. Wildlife producers believe that they have the recipe for success and that opportunities are endless, provided that the legislation is altered.

The critical success factors, as identified by the wildlife producers, turned out to be more legislation orientated than management orientated. Although it was expected that financial management and

technical expertise would be pointed out as the most prominent success factors, it was hardly even mentioned – especially in the typical trophy hunting system. This gives the impression that the legislation factor, which was explained in detail, has such a vast impact, that the rest is not worth discussing.

## **CHAPTER 6**

### **CONCLUSIONS AND RECOMMENDATIONS**

From the results of this study, which consists of a description of the general characteristics of the wildlife industry in the Western Cape as well as the evaluation of identified typical wildlife production systems in different regions in the Western Cape Province, it is essential to draw conclusions and necessary to make some recommendations.

#### **6.1 CONCLUSIONS**

The wildlife industry lacks economic research. Available literature on this industry's contribution to the South African economy is not always properly described in terms of how individual figures were calculated. Also, figures from different sources are not comparable to each other, because of the lack of a standard set of terms and the meaning thereof. Although these figures are not totally comparable to each other, it is clear that the wildlife industry does contribute considerably to the South African economy.

No economic research has been done on the Western Cape wildlife industry. This study, which evaluated the economic viability of different wildlife production systems in the Western Cape Province, was therefore essential. Firstly, a baseline study was done to describe the characteristics of wildlife production units in the Western Cape. The results of this initial study will be valuable for future scientific research on this industry. This information was then analysed and two typical wildlife production systems were identified and evaluated according to certain dimensions. Critical success factors that influence these systems were identified by wildlife producers.

From the results of the initial survey, describing the characteristics of the wildlife industry in the Western Cape, no confusion remains regarding the significance of this industry. Wildlife production units cover a noteworthy percentage of the total area of the province and are evenly spread within the province. The industry has grown rapidly in the past 10 years and with a high diversity of wildlife of at least 37 different species and ecotourism, hunting and live sales are the most prominent ways of utilising wildlife. This industry also contributes in terms of job opportunities.

Although many wildlife producers did not participate in the study, a total number of 115 wildlife production units were confirmed through this survey and are widely spread in the Western Cape. Most of these units are located in the Central Karoo (28%) and Eden (27%) District Municipalities.



Towns with the most wildlife production units surrounding them are Beaufort West, Mossel Bay, Barrydale and Ceres.

The wildlife production units that were part of the study cover a total of 522 282 hectares, with the smallest wildlife production unit covering only 12 hectares and the largest one covering 54 000 hectares. Thirty-three percent of units occupy an area of more than 5 000 hectares.

Many wildlife production units not only facilitate wildlife production, but also commercial livestock and other agricultural practices. The study showed that 37% of wildlife production units focus solely on wildlife production, while 35% of wildlife production units have commercial livestock in combination with wildlife production and 28% facilitate other agricultural practices together with wildlife production. However, 66% of all wildlife production units in the study utilised 90% or more of the total area of the unit for wildlife production and related purposes.

Results show that 60% of owners of wildlife production units are full-time wildlife producers, while 40% are involved on a part-time basis. Part-time producers are mainly business men. Many wildlife production units are managed by a wildlife manager appointed by the owner.

The most popular way of utilising or marketing wildlife in the Western Cape is through ecotourism, as indicated by 55% of wildlife production units. Hunting for own use, biltong hunting, trophy hunting and live sales are also widely in practise. Only game meat sales and the commercial harvesting of wildlife seem less popular. Wildlife-viewing by means of “game drives”, birding, hiking trails, wild flower viewing and photo safaris are some of the ecotourism-based activities that are usually offered at wildlife production units.

One to five permanent jobs are allocated to wildlife production on 65% of wildlife production units. Five percent of wildlife production units in the Western Cape provide more than 20 job opportunities each, where 60 is the highest number of employees permanently employed on a wildlife production unit. A total number of 565 permanent jobs are allocated to the wildlife production units in the Western Cape that formed part of this study.

Wildlife mainly utilise natural veld as a source of nutrition. Springbok is the species that occurs on the most (86%) wildlife production units in the Western Cape. Each species of the “big five” can also be found in the Western Cape.

Certain facilities, with the aim of increasing the income of the unit by adding value to the experience of the client, are usually present on wildlife production units. Most wildlife production

units in the study area provide accommodation to visitors, while conference and slaughter facilities can also be found on many.

Ecotourism is seen by most wildlife producers as the greatest opportunity that exists within the wildlife industry. Hunting offers a great opportunity to certain regions of the province. According to wildlife producers, the greatest threat to the Western Cape wildlife industry is the overregulation of the industry.

The two typical wildlife production systems identified and evaluated, namely the typical biltong hunting system in the Beaufort West region and the typical trophy hunting system in the Southern Cape region, brought insight into the financial as well as physical position of wildlife production in these areas.

The typical biltong hunting system, with its land size of 10 000 hectares, housing sheep as well as wildlife to the equivalent of 349 large stock units, has a net farm income of R197 781. Although the net farm income is positive, the amount of overhead costs took its toll on the total farm gross margin of R636 749. The total farm gross margin does not differ much from the total gross value of production, as the impact of directly allocatable variable costs is very small. In fact, almost no directly allocatable variable costs are present in this system. Since wildlife species naturally occur in the region, and therefore are immune to diseases that normally affect livestock, costs such as veterinary and medicine are not applicable to this enterprise. The occasional loss of wildlife to diseases is seen as part of nature and therefore no additional costs are incurred to prevent this. Wildlife is seen and utilised as a bonus to livestock production.

Furthermore, sundry income plays a significant role in the wildlife enterprise of this system, as 48% of the gross margin consists of sundry income. This additional income is mainly from accommodation cost and daily fees, paid by biltong hunters.

The system has a favourable solvency position as any outstanding debt can be covered by assets, but the profitability is not that favourable. Capital is not efficiently employed in this system, but generally speaking, agriculture, and more specifically extensive production systems, is known for low capital turnover ratios.

Veld management is important to wildlife producers, since bad veld management has a negative impact on the condition of wildlife and therefore also on the financial performance of the wildlife production system. The total stocking rate on this typical system, which includes livestock and wildlife, results in 29 hectares per large stock unit. This falls within the standard norms for the area, which ranges between 25 and 36 hectares per large stock unit.

The typical trophy hunting system, with its land size of 300 hectares, housing wildlife to the equivalent of 22 large stock units, showed a negative net farm income of –R14 917. The overhead costs of this system exceed the total farm gross margin of R190 700, which explains the negative net farm income. The total farm gross margin does not differ much from the total gross value of production, as the impact of directly allocatable variable costs (mainly veterinary and medicine costs) is not that harsh in this system. Since the wildlife species in this system are more valuable than those in the typical biltong hunting system, it is worthwhile to spend money to prevent losses from diseases.

Despite the negative net farm income, and therefore also poor profitability, the system shows a healthy solvency position, as any outstanding debt can be covered by assets. As in the typical biltong hunting system, capital is also not efficiently employed in this system. Generally speaking, however, agriculture and more specifically extensive production systems, are known for low capital turnover ratios.

Sundry income plays a significant role in especially this system as 93% of the gross margin consists out of sundry income. This income is mainly from accommodation, which is available to not only the few trophy hunters, but also tourists to stay on this wildlife production unit over weekends and long-weekends.

The stocking rate on this typical system results in 14 hectares per large stock unit. This is more or less in line with the standard ecological capacity of that region. Wildlife producers regard their veld management a serious matter, since with bad veld management, the condition of the wildlife as well as the financial performance of the system will be negatively impacted. Most of the time, too much money invested is at stake to take risks on bad veld management decisions.

Although the trophy hunting species have high gross margins per large stock unit, this system runs at a loss. The main problem with the typical trophy hunting system is the overhead costs that are not covered by the gross margin. This system has a very high gross margin per animal marketed (hunted), but not enough animals are hunted to generate an acceptable net farm income, or even to cover the overhead costs. It, however, seems that there is an underlying cause for this. Because the wildlife industry is subject to a lot of legislation and regulations, which limit the variety of species allowed in the region, the tourism as well as trophy hunting industries are hampered. Although the typical trophy hunting system currently runs at full large stock unit capacity, there is room for improvement regarding the occupancy rate. Wildlife producers believe that, if the restriction on the variety of species could be relieved to some extent, and the wildlife industry in the Southern Cape could revive, and trophy hunters as well as eco-tourists could be abundant in the area, this wildlife production system could be profitable again. As soon as it is profitable again, the

increase of land size can be considered, which would result in a larger large stock unit capacity, with a larger number of species to be hunted and therefore a higher gross margin as well as net farm income to be generated.

The wildlife producers on this typical system are business men who manage their wildlife production on a part-time basis, and earn other income besides income from wildlife production. Besides for them feeling hopeless, they still have a passion for the wildlife industry and therefore fund the wildlife production system from other income sources.

Gross margins are used to compare different enterprises to each other. The total farm gross margin of the typical biltong hunting system (R636 749) is much higher than that of the typical trophy hunting system (R190 700), which is an indication that the typical biltong hunting system in Beaufort West should be financially in a better position.

The springbok enterprise in the typical biltong hunting system has the highest gross margin in both typical systems. When the gross margin is expressed per large stock unit, however, the trophy hunting species show the best results by far. It is, however, important to realise that a large amount of income earned from accommodation, was allocated to these species, and it had a positive impact on the gross margin per large stock unit. The high gross margin of springbok is therefore because of the large number of animals. Still, the gross margin per large stock unit for springbok is higher than that for the livestock enterprise, which makes it worthwhile to keep the wildlife as opposed to replacing it with more sheep.

Wildlife production has the potential to be profitable and to have a healthy cash flow. It depends, however, largely on the large stock unit capacity of the wildlife production unit, as wildlife production is sensitive to economies of scale. According to ABSA (2003), a hunting unit needs to be large enough to accommodate an equivalent of 350 large stock units, in order to be profitable and, that smaller units, such as those able to accommodate an equivalent of only 150 large stock units are not profitable in the commercial sense of the word. This has been confirmed by the two typical wildlife production systems that have been evaluated. The typical biltong hunting system, with its total equivalent of 349 large stock units, or wildlife equivalent of 122 large stock units, is profitable, although a bit skimpy. This confirms why the typical trophy hunting system, with its 22 large stock units is not profitable.

When comparing the typical biltong hunting system to other biltong hunting systems in the literature, the figures is mostly in line with the biltong hunting system in the Karoo. Although shrinking margins are a challenge, this system is successful in the way that wildlife producers perceive the wildlife enterprise as additional income, almost without any direct costs.

Because of the high unemployment rate in South Africa, the supply of job opportunities is an important aspect. The Western Cape wildlife industry contributes to this aspect. On the typical biltong hunting system, five permanent workers are employed, each earning a salary of R1 450 per month, which is more than the minimum wages amount required by legislation. On the typical trophy hunting system, two permanent workers are employed, each earning a salary of R1 700 per month. Apart from only the number of jobs that are supplied by the wildlife industry and the decent salaries paid to permanent workers, some other important measures should be taken into consideration. These workers gain a lot of experience and develop from having no skills, into highly skilled individuals in specific tasks related to wildlife production. This might imply a higher level of income as well as future career opportunities.

This study has shown that wildlife production in the Western Cape has grown rapidly in the past few years and that a lot of opportunities exist for this industry. However, the aspects revealed, that pose a threat to the industry, should not be overlooked but the effect these limitations have on the factors that are critical for success, should be thoroughly investigated.

## **6.2 RECOMMENDATIONS**

Literature on the wildlife industry is not abundant and available figures, from different sources, on the economic contribution of this industry, are not comparable. It is therefore advisable that when formal censuses and research studies are conducted, more attention be given to properly defining the figures. It is essential to use a standard set of terms, to avoid any confusions regarding the meaning of, and the calculation used to determine the figure.

Looking at the percentage area of total agricultural land (4.36%), covered by only those wildlife production units that formed part of this study, and having in mind all the other wildlife production units that did not even participate, the question arises whether the Department of Agriculture put in at least 4.36% of its resources to assist this industry in reaching full potential. The wildlife industry is a very diverse industry and in this study it was indicated that 63% of wildlife production units not only facilitate wildlife production, but also livestock or other agricultural activities. The fact that many wildlife producers are also farmers in the agricultural sector, should urge the Western Cape Department of Agriculture to ensure a service to clients that fulfils the whole spectrum of their needs.

The Department of Agriculture is under increasing pressure from wildlife producers to get involved in the wildlife industry through amongst other things, research. A lot of research regarding the economic, ecological and social impacts still needs to be done to determine the full contribution and capacity of this industry. Research priorities on the economic impact would include the

economic contribution of the wildlife industry to the economy of the Western Cape Province; the marketing of wildlife species and wildlife products, which could include an investigation on the possibility of a wildlife auction in the Western Cape Province; and also the development of ecotourism in the province. On the ecological side, research priorities include the development of methods to determine veld condition and ecological capacity at farm level; the utilisation of vegetation by different wildlife species; suggested stocking rates based on the above; impact of species, that historically did not occur in certain regions, on the vegetation and on other species in these regions; as well as general veld management principles. Research on the social impact that will be valuable includes legal implications for the wildlife industry to reside under the Department of Agriculture, therefore being less influenced by the rules and regulations of the government conservation authority; and the contribution of the wildlife industry (which includes the ecotourism industry) to job creation, with an emphasis on skills transfer to employees.

Regarding the outcome of the evaluation of the two typical hunting systems, it should be kept in mind that these typical units are not representative of the total wildlife industry and not even of the Western Cape wildlife industry, but only of these typical wildlife systems in their separate regions. From these results, it is clear that the large stock unit capacity of a wildlife production unit has an influence on the potential profitability of such a unit. The larger the unit, and therefore the larger the capacity, the more profitable it is likely to be. Although the directly allocatable variable costs involved in extensive wildlife production do not have a large impact on the gross value of production, it is often the overhead costs that cause the downfall of such a system.

The government conservation authority in the Western Cape Province implemented legislation, which does not allow wildlife species in an area that historically did not occur in that specific area. However, wildlife producers have experienced changes in the composition and distribution of vegetation, parasites, diseases and small wildlife species over time, which gives the impression that it does not necessarily seem sensible to limit the types of wildlife species to those that were known to occur in certain areas some 300 years ago. It is therefore suggested that thorough research is done, to investigate the soundness of this legislation on species distribution.

There is currently no existing wildlife auction in the Western Cape Province, and wildlife producers have to travel to other provinces to buy or sell animals. It is therefore recommended that government undertake an investigation into the possibility of facilitating a wildlife auction in the Western Cape, together with an analysis on how to improve conditions to become favourable for such an auction.

Although wildlife producers contribute towards conservation and although the application of sound conservation principles is important to these wildlife producers, they also need to generate an

income from wildlife production in order to make a living out of it. Without the ability to do that, they might consider it better to cultivate the lands, rendering it totally lost to conservation. Despite of some systemic problems, wildlife producers are of opinion that the pressure in terms of legislation and regulations makes it harder for them (in some regions more than other) to manage their wildlife production units in a cost effective and profitable manner to reach optimal potential on ecological, economic and social levels.

Although the main objectives of government conservation authorities and wildlife producers might differ slightly, the contribution of both towards conservation serves as common ground. For that reason, it is suggested that a joint approach is followed to further develop the wildlife industry. To establish that joint approach, a level of trust needs to be developed between the different role-players. All possible solutions should be considered to find a compromise which will be to the benefit of both conservation (and therefore also the government conservation authority) and wildlife production (and therefore also the wildlife producers). All involved in conservation and agriculture should be considerate of each other's viewpoints, set aside personal and historic issues and acknowledge that a joint approach will benefit biodiversity as well as present and future generations.

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## APPENDICES

### APPENDIX 1: QUESTIONNAIRE



**CONFIDENTIAL: WESTERN CAPE DEPARTEMENT OF AGRICULTURE**

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### QUESTIONNAIRE

#### A. MANAGEMENT

1	Type of farming	<i>No wildlife</i>	<i>Only wildlife</i>	<i>Wildlife/Commercial livestock</i>	<i>Wildlife/Other</i>				
2	<b>If you selected "No wildlife"...</b>								
	a) Are you planning on starting to farm with wildlife in the next 3 years?	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;"><i>Yes</i></td> <td style="width: 50%; text-align: center;"><i>No</i></td> </tr> </table>				<i>Yes</i>	<i>No</i>		
<i>Yes</i>	<i>No</i>								
	b) ...proceed to section C, complete it and send back the questionnaire.								
3	Area of farm/ranch that is allocated to wildlife (ha)								
4	Do fences exist inside the area allocated to wildlife?	<table border="1" style="width: 100%;"> <tr> <td style="width: 33%; text-align: center;"><i>Yes</i></td> <td style="width: 33%; text-align: center;"><i>No</i></td> <td style="width: 34%; text-align: center;"><i>Partially</i></td> </tr> </table>				<i>Yes</i>	<i>No</i>	<i>Partially</i>	
<i>Yes</i>	<i>No</i>	<i>Partially</i>							
5	Year in which wildlife production was started on this farm								
6	How many jobs are allocated to wildlife and wildlife related practices on your farm	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;"><i>Permanent</i></td> <td style="width: 50%; text-align: center;"><i>Temporary</i></td> </tr> <tr> <td colspan="2" style="height: 20px;"></td> </tr> </table>				<i>Permanent</i>	<i>Temporary</i>		
<i>Permanent</i>	<i>Temporary</i>								
7	Are there any wildlife farms/ranches bordering yours	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;"><i>Yes</i></td> <td style="width: 50%; text-align: center;"><i>No</i></td> </tr> </table>				<i>Yes</i>	<i>No</i>		
<i>Yes</i>	<i>No</i>								
8	If yes, who? (Name, Address / Contact number)	1							
		2							
		3							

**Mark all relevant blocks in questions 9 – 11:**

9	Marketing of wildlife:	<input type="checkbox"/> Ecotourism <input type="checkbox"/> Live sales <input type="checkbox"/> "Game drives"	<input type="checkbox"/> Biltong hunting <input type="checkbox"/> Trophy hunting <input type="checkbox"/> Hunting for own use	<input type="checkbox"/> Game meat sales <input type="checkbox"/> Commercial harvest <input type="checkbox"/> Other
	Specify "Other"	.....		
10	<u>Other activities:</u>	<input type="checkbox"/> Wild Flower viewing <input type="checkbox"/> Bird watching <input type="checkbox"/> Photo safaris <input type="checkbox"/> Fishing	<input type="checkbox"/> Hiking trails <input type="checkbox"/> Mountain biking <input type="checkbox"/> 4x4 trials	<input type="checkbox"/> Horse trails <input type="checkbox"/> Quad biking <input type="checkbox"/> Other
	Specify "Other"	.....		
11	Animal nutrition:	Wildlife utilise natural veld as main source of nutrition	<input type="checkbox"/>	
		Planted pasture serves as main source of nutrition for wildlife	<input type="checkbox"/>	
		Regular feeding serves as main source of nutrition for wildlife	<input type="checkbox"/>	

#### B. INFRASTRUCTURE (on areas allocated to wildlife)

**Mark all relevant blocks:**

12	Water sources:	<input type="checkbox"/> Perennial river(s)	<input type="checkbox"/> Spring(s)	<input type="checkbox"/> Borehole(s)		
13	Water points:	<input type="checkbox"/> Natural water point(s)	<input type="checkbox"/> Watering trough(s)	<input type="checkbox"/> Dam(s)		
14	Type of fence:	<input type="checkbox"/> "Game-proof fence" (2,4m+)	<input type="checkbox"/> Common livestock fence			
15	Facilities:	<input type="checkbox"/> Accommodation	<input type="checkbox"/> Conference	<input type="checkbox"/> Slaughter facilities <input type="checkbox"/> Other		
	Specify "Other"	.....				
16	Do you think it is necessary for further research on the wildlife industry?	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;"><i>Yes</i></td> <td style="width: 50%; text-align: center;"><i>No</i></td> </tr> </table>			<i>Yes</i>	<i>No</i>
<i>Yes</i>	<i>No</i>					

**CONFIDENTIAL : WESTERN CAPE DEPARTEMENT OF AGRICULTURE**

17	If “yes”, what type of research is needed?		
18	Are you willing to participate further in this research and would you possibly be available for a confidential, personal interview with the researcher at a later stage?	Yes	No
19	What according to you are the greatest opportunities for the wildlife industry in the Western Cape?		
20	What according to you are the major threats for the wildlife industry in the Western Cape?		
21	<b>Wildlife species occurring on farm/ranch (<i>Fill in numbers of species</i>)</b> (This information again will be treated with highest confidentiality)		
	<input type="checkbox"/> Roan Antelope <input type="checkbox"/> Tsessebe <input type="checkbox"/> Blesbok <input type="checkbox"/> Wildebeest (blue) <input type="checkbox"/> Bontebok <input type="checkbox"/> Bushbuck <input type="checkbox"/> Buffalo <input type="checkbox"/> Duiker <input type="checkbox"/> Eland	<input type="checkbox"/> Gemsbok <input type="checkbox"/> Cape Grysbok <input type="checkbox"/> Hyena <input type="checkbox"/> Cheetah <input type="checkbox"/> Giraffe <input type="checkbox"/> Klipspringer <input type="checkbox"/> Kudu <input type="checkbox"/> Lama <input type="checkbox"/> Lechwe	<input type="checkbox"/> Lion <input type="checkbox"/> Leopard <input type="checkbox"/> Nyala <input type="checkbox"/> Elephant <input type="checkbox"/> Oribi <input type="checkbox"/> Rhinoceros (black) <input type="checkbox"/> Rhinoceros (white) <input type="checkbox"/> Reedbuck <input type="checkbox"/> Impala
		<input type="checkbox"/> Hartbeest (red) <input type="checkbox"/> Mountain Reedbuck <input type="checkbox"/> Zebra <input type="checkbox"/> Hippopotamus <input type="checkbox"/> Springbok <input type="checkbox"/> Steenbok <input type="checkbox"/> Suni <input type="checkbox"/> Wildebeest (black) <input type="checkbox"/> Sable Antelope	<input type="checkbox"/> Fallow Deer <input type="checkbox"/> Grey Rhebuck <input type="checkbox"/> Ostrich <input type="checkbox"/> Waterbuck <input type="checkbox"/> Wild dog <input type="checkbox"/> Other
	<b>C. DEMOGRAPHIC ASPECTS</b>		
22	Name of Owner (not manager)		
23	Tel		
24	Cell		
25	Fax		
26	E-mail		
27	Web page		
28	Postal Address		
29	Postal Code		
30	Farm Name		
31	Nearest town to farm		
32	Distance to nearest town (km)		
33	Municipality		
34	District municipality		
35	GPS-reading of farm/ranch		
36	Total area of farm/ranch (ha)		
37	Owner is farming	<i>Full-time</i>	<i>Part-time</i>
38	If part-time, what is his occupation?		



## **APPENDIX 2: AGENDA FOR DISCUSSION GROUP MEETINGS**

### **WILDLIFE DISCUSSION GROUP DISCUSSION POINTS**

#### **1 FARM PROFILE**

- a Area of the farm
- b Farming activities

#### **2 WILDLIFE ENTERPRISE**

- a Age/sex structure
- b Natality
- c Wean %
- d Mortality
- e Number (or %) of animals sold / hunted
- f Number of animals purchased

#### **3 INCOME IN TERMS OF WILDLIFE ENTERPRISE**

- a Income directly from biltong hunting
- b Income directly from trophy hunting
- c Income by using other methods
- d Income from by-products
- e Other additional income
- f Insurance
- g Internal transfers
- h Income fluctuation

#### **4 DIRECT COST IN TERMS OF WILDLIFE ENTERPRISE**

- a Purchase feed and supplements
- b Feed transferred from other enterprises
- c Veterinary & medicine
- d Contract work
- e Packing material
- f Marketing costs
- g Hired transport
- h Other direct costs

#### **5 INCOME NOT ALLOCATED TO SPECIES**

- a Restaurant
- b Daily fees
- c Ecotourism
- d Ecotourism value for different species

#### **6 LIVESTOCK ENTERPRISE**

- a Age/sex structure
- b Lamming percentage
- c Weaning percentage
- d Mortality
- e Animals sold/used
- f Animals purchased

**7 INCOME IN TERMS OF LIVESTOCK ENTERPRISE**

- a Income directly from sales
- b Income from by-products
- c Other additional income
- d Insurance
- e Internal transfers

**8 DIRECT COST IN TERMS OF LIVESTOCK ENTERPRISE**

- a Purchased feed & supplements
- b Feed transferred from other enterprises
- c Veterinary & medicine
- d Contract work
- e Packing material
- f Marketing costs
- g Hired Transport
- h Other direct costs

**9 CROP ENTERPRISE**

- a Yield (t/ha)
- b Yield quality distribution
- c On-farm use (t)
- d Opening/closing stock
- e Insurance
- f Other additional income
- g Internal transfers

**10 DIRECT COST IN TERMS OF CROP ENTERPRISE**

- a Seed
- b Fertiliser & control
- c Contract work
- d Marketing costs
- e Hired transport
- f Packing material
- g Other direct costs

**11 GENERAL**

- a Land value
- b Fixed improvements
- c Vehicles, machinery, implements
- d Labour
- e Sundry farm income
- f Overhead costs
- g Cost allocation
- h External factor costs
- i Own factor costs
- j Veld condition
- k Critical success factors

**THE END!**