Chapter 6
Private Game Reserves in Southern Africa

Wouter van Hoven

Abstract Private game reserves now number about 11,600 in South Africa, covering in the order of 21 million hectares. It has become a USD 1 billion industry based on the sustainable use of wildlife as a natural resource. This has resulted in a 40-fold increase in the number of wildlife from the early 1960s to today with South Africa now having more wildlife than at any point in time during the past 200 years. This chapter discusses the economics of this industry and uses lions and rhinoceros as illustrative examples of how the placing of a commercial value on wildlife species can turn the tide from a decline in numbers and local extinctions, toward healthy populations. The game capture and wildlife veterinary services, fencing and transportation, disease control and nutrition are furthermore discussed in illuminating the evolution of a thriving private game reserve industry.

Keywords Private game reserve • Economic value of wildlife • Evolution of industry • South Africa

6.1 Introduction

Private game reserves (PGR) in southern Africa are located mostly on private land where wildlife management is geared towards making a profit by means of consumptive or non-consumptive use of the wildlife resources. Within this generalized term of PGR we distinguish three categories. Where the income is mainly derived from sustainable hunting they are commonly referred to as game ranches. Where more intensive management and breeding of rare or endangered species takes place, the term game farming has become more appropriate. Where tourism and photographic safaris are the focus, they are referred to as PGR. In all three forms of managing wildlife on private land, making a profit from the wildlife enables the

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landowners to practice the conservation of wildlife species. In making a profit from wildlife, landowners have to pay taxes to the state and become labeled as part of the wildlife industry. Other important players in this industry include game capture companies, taxidermists, wildlife veterinary services, game proof fencing suppliers, wildlife lick and supplementary feed manufacturers and suppliers. The whole wildlife industry had a 2012 turnover in the order of USD1 billion in South Africa alone (Dry 2012). The pivotal role this industry plays in South Africa is also evident in the area of land these companies manage. The total area of South Africa is 122,341,000 ha. Only 14 % (17 million ha) of the total area of South Africa is suitable for rain fed crop production. There is still a steady growth in the number of game ranches in South Africa and there are now 11,600 game ranches covering an estimated 22 million ha or 18 % of the country's land surface. Most of these are cattle ranches that converted into game ranches (Dry 2012).

This chapter focuses on game ranches (see Table 6.1 for an overview of this institutional arrangement). It first presents a brief historical background to this approach in conservation management, highlighting how the idea emerged, how the practice of game ranching became legally endorsed and what challenges needed to be overcome for game ranching to take off (see also Table 6.2 for the main events in the industry evolution). The chapter then details the economics of game ranching.

Table 6.1 Overview of the main features of the institutional arrangement of private game reserves

Feature	Description
Main focus	To improve livelihood whilst at the same time conserve biodiversity
Actors involved	Game ranchers as the owners of the land are the main actors. Others that are equally important include wildlife veterinarians, game capture and transportation providers, wildlife auctioneers, professional hunters and hunting outfitters and taxidermists
Legal entity	The provincial nature conservation departments lay down the regulations within which the industry functions such as permits for wildlife relocations, hunting law exemptions for fenced PGRs and approving management plans for PGRs
Ownership	Ownership resides largely with individuals, partnerships, companies and communities and legal conservancies
Management	Management resides largely with individuals, partnerships, companies and communities and legal conservancies with professional wildlife managers often employed in formulating goals and executing such
Sources of finance	Private funding and venture capital
Contribution to conservation	It trebled conservation land and made wildlife valuable thus worth the protection and management. There are about 11,600 game ranches covering an estimated 22 million hectares or 18 % of the country
Contribution to livelihood	It is run as a business with a profit making motive and the better the wildlife is managed, the better the profit. Side businesses also profit such as animal feed producers, helicopter service providers for game capture and counts, veterinarians, taxidermists, wildlife transport contractors, abattoirs and ecotourism service providers

Table 6.2 Overview of the main incidents in the development of private game reserves

Year	Main event
1860	Transvaal Government Gazette: Farmers state that their properties were out of bounds to hunters
1947	Natal Parks Game and Fish Preservation Board established as the first provincial control body that also looked at private farms. Other provinces followed
1953	IUCN conference in the Belgian Congo discusses wildlife ranching
1965	First game auction at Tshipise in the Transvaal
1970	Founding of South African Journal of Wildlife Research
1957	South African Hunting and Game Conservation Association consolidates regional hunting association to become a national association
1987	Department of Agricultural Development formally recognizes wildlife ranching as a fully-fledged agricultural activity with the potential to produce both meat and a range of value added products and activities
2005	Wildlife Ranching South Africa (WRSA) is formed and consolidated other PGR organisations to become the single uniformed voice of the industry

It gives a general overview of the game ranching industry and zooms in on the economics of ranching lions and rhinoceros. These wildlife species are illustrative for their economic value; lions are valuable for the hunting market and rhinoceroses are valuable for the horn trade. Drawing on these examples, the chapter argues that species can be protected from decline and eventual local extinction by allowing them to become commercially valuable. The chapter ends with a brief summary of game ranching as a conservation approach.

6.2 The Emergence of Game Ranching in Southern Africa

Wildlife in southern Africa long had a *res nullius* status (‘belongs to no one’). During the Great Trek, the Boers, leaving the Cape Colony during the first half of the nineteenth century, relied to a large extent on the hunting of wildlife to sustain themselves on their great journey north. Hunting for meat became part of the culture of the Afrikaners (those from Dutch decent) and they dried the meat to become biltong which they could eat for months without any preservatives or refrigeration on their journeys with the ox wagons or on horseback. But because hunting was not regulated up to the middle of the twentieth century, exploitation occurred and some of these pioneers started producing biltong on a commercial scale without having to pay for the meat. In addition, the country experienced a rapid decline in the numbers of foreign trophy hunters coming to South Africa because of the limited free range wildlife available outside of the public protected areas. Furthermore, the viral disease Rinderpest came into northern Africa in 1888 and moved southward reaching South Africa by 1896. In its wake, it not only

killed cattle but also large numbers of wildlife species. Outbreaks of another disease (Nagana) also occurred in the Natal province in 1929. This outbreak led to the deaths of some 35,000 animals in a matter of 2 years between the years 1929 and 1931 (Bigalke 1950). Most of these wildlife mortalities were the result of government shooting aimed at preventing the spread of the disease. The use of the chemical DDT was also widespread to eradicate the tsetse fly that transmitted the disease. This led to the almost extermination of wildlife in Natal. Game reserves – already established in 1895 – were not spared in the Nangana eradication campaign, making the intense differences between conservationists and cattle farmers visible, the former being against the shooting of animals for disease prevention, while the latter being in favor thereof. Many of these farmers and their descendants were later grateful for these very conservation areas because they became the sources for stock in the development of private wildlife ranches.

The extermination of wildlife contributed to the establishment of public protected areas like national parks and reserves. With hunting being prohibited in public protected areas and little wildlife left to hunt outside these areas, the idea of game ranching emerged. A key player in this evolution was Dr. Reay Smithers, retired director of the Rhodesia National Museums and author of the book 'The mammals of the southern African sub-region' (Smithers 1983). He invited Dasmann and Mossman, two promising natural science researchers from the USA, to the then southern Rhodesia in 1959. Their assignment was to study a large tract of land of about 55,000 ha in the Rhodesian *lowveld* to establish if wildlife could be ranched like cattle and/or in combination with cattle. Carruthers (2008) concludes that not only could wildlife be ranched in combination with cattle, but could also be ranched on its own in a profitable way. Such research marked the birth of the game ranching industry in southern Africa. For instance, by the mid-1970s, 17 large game ranches existed in Zimbabwe representing about 9 % of the 179 that received cropping permits in 1973 from the government. The total area of these ranches was 1,721,845 ha of which 111,541 ha was utilized for game only (Mossman and Mossman 1976).

In South Africa the need for action was also prevalent. By 1960 wildlife numbers in South Africa were the lowest ever. It was estimated that only about 500,000 wild animals occurred in the whole of the country, including public protected areas like national parks and reserves. Only about 200 white rhinoceros at that time occurred in the whole of South Africa, bontebok numbers were estimated to be 19 and mountain zebra 90. One of the key visionary players and innovators in both institutional wildlife conservation and private game ranching in Natal and in the rest of the country was Dr. Ian Player. He was born in 1927 and joined the Natal Parks Board in 1952 and became warden of the Umfolozi Game Reserve. His first focus was the very low numbers of certain species, in particular the white rhino that was almost locally extinct. They basically only occurred in the Umfolozi Game Reserve and he started 'Operation Rhino' in the late 1960s by relocating rhinos to other protected habitat. He and his co-workers pioneered the chemical capture technique of wildlife and rhino in particular, as well as the care and transportation. Safe breeding herds

were established in other parts of the country and in Kruger National Park, and their numbers increased rapidly. Today at the age of 87 Dr. Ian Player is still actively involved in the conservation debate, supporting the legalization of trade in rhino horn as a stimulus to the game ranching industry to save the species.

Another visionary and innovator in the 1960s was Dr. Anton Rupert who founded the South African Nature Foundation and suggested and financed the establishment of the first chair in Wildlife Management at the University of Pretoria. Prof. J. du P. Bothma became the first incumbent of this chair. He edited the first handbook on 'Game Ranch Management', which became 'the bible' of this industry up to today and is now in its 9th edition. The academic chair later grew into the Centre for Wildlife Management. This academic centre made a significant contribution to wildlife management in southern Africa by educating some 600 post-graduate students who took up leading wildlife management positions in the country like directors of national parks and private ranch managers. In sum, game ranching in southern Africa emerged as a response to the rapid extinction of wildlife both inside and outside national parks.

6.3 From *res nullius* Status to Private Ownership of Wildlife

Prior to the 1980s, breeding and sustainable use of suitable wild herbivore species in farming systems was seldom seen as an agricultural activity (Ramsay and Musetha 2008). The use of wild herbivores in farming systems was generally seen as an activity regulated by legislation, administered by nature conservation structures at government and provincial level. Nevertheless, as far back as the early 1930s, some landowners did allow wildlife on their farms and more than two decades later they discovered that land with some wildlife on it sold at higher prices than land without wildlife (Bothma 2010). Moreover, some landowners harvested wildlife to commercially produce biltong. For instance, in the Orange Free State this was common with blesbok and in the Central and Northern Cape many springbucks were harvested. This was technically illegal because wildlife did not belong to the landowner. At this era, nowhere else in the world did wildlife belong to landowners. With the state, via the provinces, receiving a fair income in the selling of hunting licences, there was also little interest in legally making wildlife the property of the landowner.

Yet, the seed had been planted. Wildlife had a monetary value to the landowner on whose land it occurred. Writings in environmental, outdoor and agricultural magazines and research publications started to promote game ranching (e.g. Stevenson-Hamilton 1947; Transvaal Province 1945; Vincent 1962; Skinner 1967, 1970; Skead 1948, 1950; Lundholm 1952; Kettlitz 1962). The changing discourse influenced the then Department of Nature Conservation of the Transvaal Province that started giving serious attention to the private ownership of wildlife. Governmental opposition against this private ownership was to be found in two

departments. First, the National Department of Agriculture did not recognize wildlife ranching as a legitimate agricultural practice. Second, the Department of Veterinary Services viewed wildlife only as a threat to domestic stock in terms of transmitting diseases.

Nevertheless, the growing awareness of the monetary value of wildlife, the academic studies that were offered at the University of Pretoria since 1965 and an increasing number of research papers (e.g. Skinner 1967, 1970; Luxmoore 1985; Kok 1984) created a more positive attitude in government towards wildlife conservation on public land and game ranching on private land. Only in 1987 did the Department of Agricultural Development formally recognize wildlife ranching as a fully-fledged agricultural activity. It was seen as viable alternative to more conventional forms of animal agriculture by producing both meat and a range of value-added products and activities. From this time forward, then, private game reserves could also request government support in the form of subsidies in times of drought or other natural disasters just as was the case with standard livestock farms. PGRs' financial statements were also to be included in individual's total income/loss for tax purposes. In sum, in 1987 wildlife ownership moved from a *res nullius* status to private ownership.

This change led to a spectacular growth in the industry, mainly driven by wildlife price increases, improvements in game capture techniques and transportation as well as the status symbol that became attached to owning a PGR. As this industry grew over the years, various organizations were started to represent the game ranchers in lobbying government, but these were usually provincial. Later, two main organizations in South Africa were launched to represent the game ranchers: the Northern Wildlife Organization and the South African Game Ranchers Organization. These amalgamated in 2005 to become Wildlife Ranching South Africa (WRSA), a national body and the single official non-profit organization representing the game ranchers. It currently has 1,500 members. WRSA's main function is to liaise closely between the game ranchers, non-governmental and governmental authorities to ensure a healthy working relationship, assisting governmental authorities with the setting up of policies, regulations and norms and standards applicable to the wildlife industry.[1] This has resulted in new policies such as the Meat Scheme Act 40 of 2000, Damage Causing Animals, Alien and Invasive Species, Threatened or Protected Species, Hunting Norms and Standards.[2] WRSA also represents the wildlife industry on the National Wildlife Forum, a forum initiated by the Minister of Environmental Affairs and Tourism. Regular district meetings are held as well as an annual general assembly and a comprehensive quarterly magazine is published. In addition, a free newsletter is distributed, an online shop exists and game auctions are arranged. As such, game ranching became a recognizable and significant sector in the South African economy. In order to mature, however, three main challenges in game ranching needed to be addressed, which are discussed in the sections below.

[1] See also http://www.wrsa.co.za

[2] See also http://www.wrsa.co.za/component/k2/item/285-welcome-to-wildlife-ranching

6.3.1 Fencing

Fencing became a major issue because the 1987 regulations stipulated that ownership of wildlife only applied for the duration the animal resided on a ranch. A ranch had to be fenced with a game proof fence, inspected by the provincial wildlife authority and an exemption certificate issued, before one could legally claim ownership of an animal if it for some reason did get out of the ranch. Moreover, the exemption certificate exempts the landowner of the hunting laws of the region; no hunting licenses are thus required to hunt on the land. Whereas mostly antelope were seen on the first PGRs, the challenges were soon to have some of the mega-fauna, such as elephants, rhinoceros, buffalo and hippopotamus. This required more than the standard fence. Electrification proved to be the most cost effective way of ensuring that bigger animals could not escape.

6.3.2 Wildlife Relocation

As the interest in southern Africa to have wildlife on the farms increased and many became fenced in, the need to obtain new blood to prevent inbreeding became important. Accordingly, the need to capture and move wildlife species became more important. This needed to be done safely to humans, with minimal mortalities to the animals and cost effectively. Initially, 20–30 % mortality was not uncommon. In the 1960s game capture mostly consisted of physical trapping or catching of the animals and restraining them and, other than nicotine sulphate and succinylcholine to pacify the animals, no other drugs were available. As such, several researchers experimented with different ways of wildlife relocation and the first handbook on the topic was published in 1970 by Dr. Tony Harthoorn (1970).

It should be noted that such experimentation took place in different countries for different species. For instance, capturing antelopes in Namibia was done through large nets before given tranquillizers, which caused a lot of stress for the animals. Jan Oelofse in Natal experimented with using thin sheets of plastic material instead of the nets, for he noticed that animals do not go through an obstacle if they can't see what is on the other side. This was a monumental step into the refinement of game capture. In Zimbabwe between 1960 and 1990, the expertise in wildlife relocation also developed to a fine art as many game ranches were registered. The Poisons Board Veterinary Committee was formed during the 1960s, which eventually became the Veterinary Committee of the Drugs Control Council. An annual training course was established in the early 1980s as well as the introduction of formal exams and licenses to help control the distribution of unregistered drugs. This training course turned into a leading school and many foreigners from neighboring countries and elsewhere enrol in this school each year. Unfortunately the dictatorial political situation in Zimbabwe has ruined most of the private game ranches.

In Zambia and Botswana private game ranches were slow to develop. In both countries the ownership of wildlife remained with the state and in Botswana the sustainable use of wildlife by means of hunting has also been abolished on public land. Nevertheless, in Zambia the minister of Tourism and Arts, Sylvia Masebo, announced in January 2013 that the game ranching industry in Zambia is a sleeping giant and 4 months later the Wildlife Producers Association of Zambia and the governmental Wildlife Authority of Zambia announced that game ownership in future will be with the game ranch owner. This spells a bright future for wildlife conservation and tourism in Zambia. In 2008 Zambia had about 52 game farms covering an average of 1,500 ha per farm that equals 52,000 ha with a total of 156 workers and a game population of 200 Large Stock Unites per farm with the total estimated value of USD 135 million. Over the past 5 years a growth of 267 % has been seen and Zambia today has in the order of 150 private game reserves[3] and Botswana has 60 game ranches,[4] as opposed to the 11,600 in South Africa. The fact that there are many more game ranches in South Africa can be ascribed to the fact that there were more cattle ranches in marginal areas, and many caught on that game ranching could be more profitable. Moreover, it is a much larger country with a vested domestic stock culture and more advanced economy and infrastructure.

In South Africa the use of capture drugs with darts and crossbows was researched in Kruger National Park. These drugs are strictly controlled by the Medicines Control Council and may only be used by veterinarians. Chemical capture of individual and smaller groups of game has become a major pillar in the game ranching industry and is still the safest and most economical way. Other innovations in the game capturing industry were the replacement of horses and nets with helicopters and plastic sheets, as well as the introduction of capture corrals in which animals could be herded with the help of a helicopter and then through a funnel directly into a transport truck without any man-handling. Today pop-up passive capture corrals are growing in popularity. With the use of web-cameras, these corrals are activated to pop-up when animals have been attracted to the feed placed in the middle. Ground staff can thereafter herd them onto the truck for delivery. Such innovations have led to less than 1 % mortality rate in relocating wildlife.

Over time, thus, game capturing has become an industry in itself. This is evident in the launch of the Wildlife Translocation Association, a voluntary association of professional game capturers and associated role-players within the industry. Its 55 members are drawn from both the private sector and the government service. The game capture industry in South Africa has an annual turnover well in excess of USD 10 million and provides employment for a significant number of employees. The members annually capture and translocate approximately 150,000 game animals.[5] The association has become a main pillar of the industry shown in the fact that the government does not issue transport permits for wildlife unless the relocation operator is a registered member of the Wildlife Translocation Association.

[3] See also http://www.wpazambia.com/Articles/GameRanchingInZambia.html

[4] See also http://botswanawildlifeproducers.com/game_ranches/game_ranches.php

[5] See also http://wta.org.za/index.html

6.3.3 Disease and Genetic Management

As the numbers of game ranches grew between 1960 and 1990, it became clear that there were also diseases associated with this industry that had to be managed as was the case with the genetic integrity of isolated herds.

The Kruger National Park veterinarian in the late 1960s and early 1970s, Dr. Eddie Young did pioneering research on wildlife diseases (Young 1970, 1972). For instance, Foot-and- Mouth disease and Tuberculosis is endemic to the Kruger Park area but uncommon on private game reserves. Du Toit et al. (2010) give a detailed account on the bacterial, viral and protozoal diseases that can occur on game ranches in southern Africa. Also the Onderstepoort Faculty of Veterinary Science of the University of Pretoria made major contributions over the years in the understanding and control of these diseases. The State Veterinary Services is the main institution to regulate diseases and as such played a major role in the growth and distribution of wildlife in the country.

Together with the emergence of such diseases, conflicts between game and cattle ranchers surfaced. For instance, Corridor Disease is caused by the protozoan parasite and transmitted by the brown ear tick. Buffaloes carry both the tick and the protozoa without showing any symptoms, however if the tick gets onto cattle and transmits the protozoan parasite, it typically leads to the death of cattle. Thus, today, a very strict testing program must be done to ensure that buffaloes are disease free before any buffalo may be relocated to other reserves. This is done by the state veterinarian who also issues the permit for transportation. This is also the reason why the price of disease free buffalo is considerably higher at game auctions and direct sales.

Besides disease management, genetic management became an issue in the game ranching industry. Genetics was seldom reported as being a problem because it became a common practice to avoid inbreeding by exchanging or obtaining new genetic lines at the game auctions. In many species this has led to improvements in the quality of trophies. A controversial aspect that has however led to many debates was the breeding of colour variants in certain species. In nature, at times a recessive gene or silent colour mutation can be present in populations for many generations without being expressed simply because the carriers rarely mate. Such a variation like the black impala would further be much more clearly visible to predators. But because of its rarity these color variations have become very popular in the trophy hunting practice and therefore much higher prices are gained for these abnormalities on the auctions and open trade. For example, the normal blue wildebeest sold at the game auctions during the first half of 2013 for USD 250 on average. A golden wildebeest bull, a colour variant of the same species, sold at a recent auction for USD 35,700, which is a 143 times more than the normal ones. Another example is the impala. The normal colored impala sells for USD 100, but the black colour variant reaches up to USD 22,000, which is 220 times more.[6] Such prices incentivize

[6] See also www.wildlifeauctions.co.za

game ranchers to increase the value of individual stock animals by selective breeding for traits including colour variation. Yet, their breeding activities must be seen as isolated from naturally occurring species in national parks and reserves and therefore do not hold any threat to the genetic integrity of species.

6.4 Economics of Game Ranching

The economic value of wildlife was the single biggest driving force in the rapid growth of game ranching in Southern Africa (Van Hoven and Viljoen 1995). PGRs became successful because wildlife generated income and provided a profit to the owner. In less than five decades, this industry grew from a zero basis to a USD 300 million local and USD 120 million foreign hunting earner today. In 2012 the income on taxidermy was USD 30 million, translocation USD 13 million, wing shoot USD 20 million, birding USD 10 million, bow hunting USD 10 million, wildlife auctions USD 20 million, fire arm, infrastructure and vehicles USD 25 million and lodges, tourism and provincial permits another USD 12 million (Dry 2013). The South African GDP was USD 400 billion for 2012 of which the agricultural sector contributed 2.5 % and the private wildlife sector 0.25 %, being USD 1 billion (Van Hoven 2013). In Fig. 6.1 the main contributors to this income are illustrated. Over the past

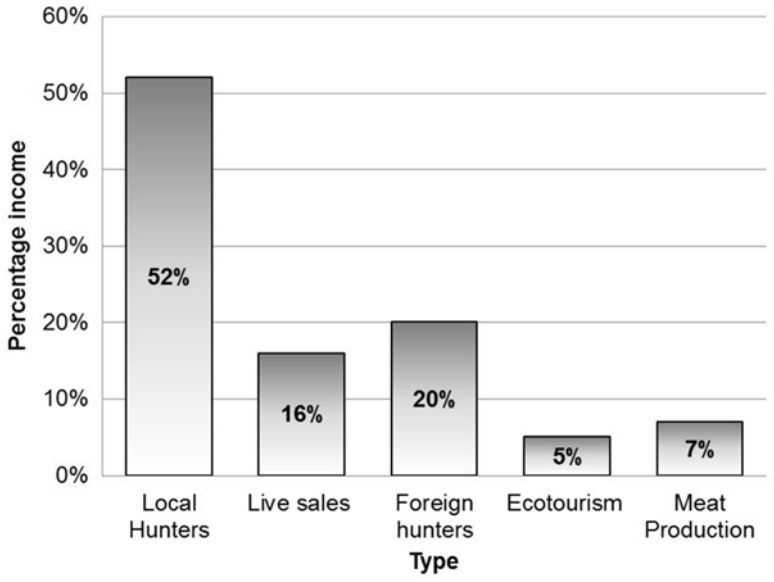

Fig. 6.1 Distribution of gross income of US$ 1 billion (2012) from wildlife ranching across different subsectors

15 years, the revenue in the wildlife industry has grown on average 20.3 % per annum (Nowers 2013). Over 100,000 people are employed in this sector (Van Hoven 2013).

Important international nature conservation organizations such as the International Union for the Conservation of Nature and the World Wildlife Fund underline the importance of sustainable use of natural resources in order to ensure biodiversity conservation in particularly developing countries. Since hunting and trading of wildlife is not allowed in national parks and reserves, game ranching can be seen as an important contribution to conservation from the private sector. That is, there is more wildlife in South Africa today as compared to any other time during the past 200 years. In 1965, the total estimated number of wildlife in South Africa was 540,000 in both private and public conservation areas. In 2013 this figure is 21 million head of wildlife of which 16 million are found on private conservation land alone (Dry 2013). How the private sector's game ranching may contribute to species protection is discussed with two illustrative examples (i.e. lions and rhinos) later in this section.

The annual turnover in wildlife auctions has shown interesting trends over the past two decades. The prices of common game species declined with 45 %, whereas the prices of rare game species increased on average with 64 % over the same period (Nowers 2013). Thus, although the total number of game animals sold on auctions over the past decade declined with 20 %, the turnover increased from USD 10 million to USD 92 million over the same period (see Fig. 6.2). Some examples of common game species would be impala, kudu, blesbok, springbok and blue wildebeest, whereas rare game species would include sable antelope, roan antelope, buffalo and the colour variants of species, such as impala, springbok, wildebeest and oryx.

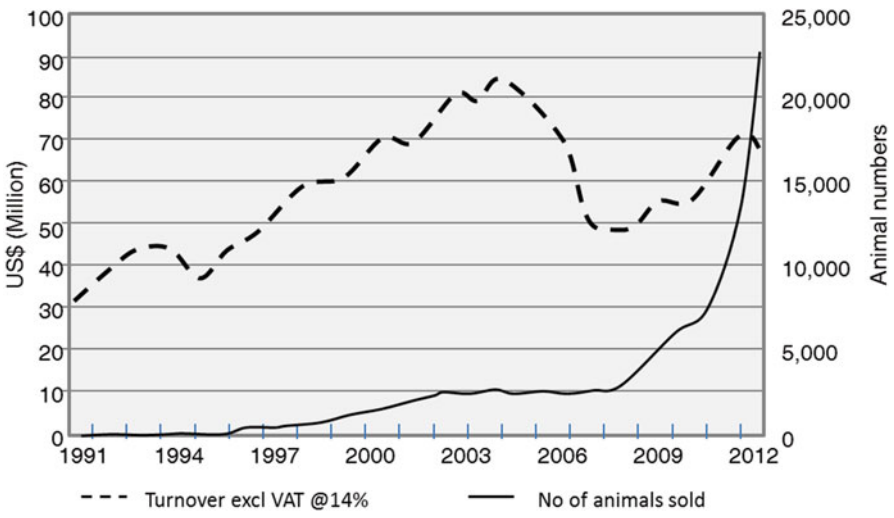

Fig. 6.2 Annual game auction turnover (in US$) vs. numbers of animals sold (Graph adapted from and with courtesy of Nowers (2013: 28))

An aspect of the game ranching industry that is bound to grow in the future due to growing popularity is the game meat or venison industry. There is around 14 million head of cattle in the country and 16 million wildlife species suitable for the venison market, yet very little of the latter is locally consumed. As the health consciousness is growing, more resistance is developing against the use of growth hormones and antibiotics in cattle feedlots, which end up on people's plates, as opposed to venison which has none of it and on average 2 % saturated fat versus 14 % in cattle. Venison is also generally viewed as being natural meat, (organic) and higher in protein than beef (Hoffman et al. 2009; Kohn et al. 2007). Estimates suggest that the total value of South Africa's venison market is around USD 30–40 million annually (which includes export venison and local consumption). The value of exported venison is dwarfed by the country's red and white meat imports that run at almost USD 400 million per year. Red Meat Research & Development SA suggests that both cattle and sheep farmed for commercial use in South Africa have remained stable over the past four decades despite a growth in population from 20 to 50 million.[7] The big attraction of venison is that it is a high-value product. Every kilogram of venison exported pays for 3 kg of red meat imported. At a time when South Africa is facing growing food insecurity, its wildlife ranching industry could not be in better shape to play a role in providing part of the solution.

It should be noted that a number of game ranches have been bought by the South African government within the framework of the land restitution program and handed to rural tribes. Because of a lack of custodianship most of these failed and the wildlife was poached. However community conservation programs based on sustainable use have been very successful in Namibia and such community game ranching programs might provide a fruitful avenue to make a contribution to food security in other African states as well.

6.4.1 Lion Breeding

The number of predators in Africa has rapidly declined. A report published by National Geographic in 2011 highlighted that Africa has seen the following declines since 1970: lions from 450,000 to 25,000, leopards from 750,000 to 50,000, and cheetahs from 45,000 to 12,000. According to Henschel et al. (2014), only 35,000 lions remain in Africa, a decline of 100,000 less than 50 years ago. Various factors such as habitat decline, human population expansion and unregulated hunting have led to these drastic numbers.

In Kenya, when hunting was declared illegal in 1977, a 70 % decline in wildlife numbers followed, including lions (CIC 2012). In Tanzania hunting is legal and is practiced in large hunting concession areas such as Selous, where hunting revenue is used to protect and manage wildlife on a sustainable use basis. No wildlife decline as reported for Kenya has happened in Tanzania. In South Africa, there are

[7] See also http://www.rmrdsa.co.za

no free roaming lions outside of protected areas such as national parks and reserves. The geographic range of lions on the African continent has already declined by 82 % by 2006 (IUCN 2006). Therefore, lion hunting technically stopped more than two decades ago. The same commercial stimulus that started game ranching thus also stimulated the start of lion ranching in South Africa. This has grown into a formidable, albeit in certain circles controversial, industry. There are today more than 100 lion farms that breed and produce lions, exchange lions for optimal genetic integrity and are members of the South African Predators Association (SAPA). There is over 5,000 lions in private lion farms with an estimated market value of USD 10 million.[8] This is more than double the number of lions in all national parks and other public protected areas in South Africa. Within the regulations of SAPA, the captive bred lions are bought by professional hunters and released on game ranches no smaller than 1,000 ha; afterwards they are available to hunters to hunt them on the basis of fair chase and not baiting, which is the standard practice elsewhere. Over 1,100 hunters came to South Africa to hunt lions on game ranches each year over the past 4 years spending on average USD 23,000 per hunt.[9] Most of these hunters come from North America and Europe (i.e. Spain and Germany in particular). It is estimated that hunting lions on a sustainable and regulated basis in South Africa keeps over a 1,000 lion hunters out of other parts of Africa, where fewer and fewer are available to be hunted and where hunting of alpha males leads to infanticide which further impacts the declining numbers. In 2009 the number of lion trophies exported out of all of Africa, excluding South Africa, was 471 and the following year 318 which gives a total for these 2 years of 789. During the same period, South Africa alone exported 1,515 which is almost double the rest of the continent (Lindsay et al. 2012).

Proponents of lion hunting argue that hunting of captive bred lions helps to protect the free roaming lions in Africa. The captive bred lions could also serve in the future to restock and subsidize populations on serious decline in other parts of Africa, which might even include Kruger National Park where the bulk of the lions are infected with bovine tuberculosis. This kind of sustainable and regulated use of lions also indirectly benefits the declining Asian tiger populations that are relentlessly being poached for their body parts. Regulated export of lion skeletons to China and Vietnam is taking some poaching pressure off the tigers in this continent.

6.4.2 Ranching with Rhinoceros

From the brink of extinction, rhinoceros has been turned around in South Africa from around 200 in 1911 to some 20,500 in 2013 (both black and white rhino). Because of the rapid decline in their numbers elsewhere in Africa and also the

[8] See also http://sapredators.co.za/landing_page.htm

[9] See also http://sapredators.co.za/landing_page.htm

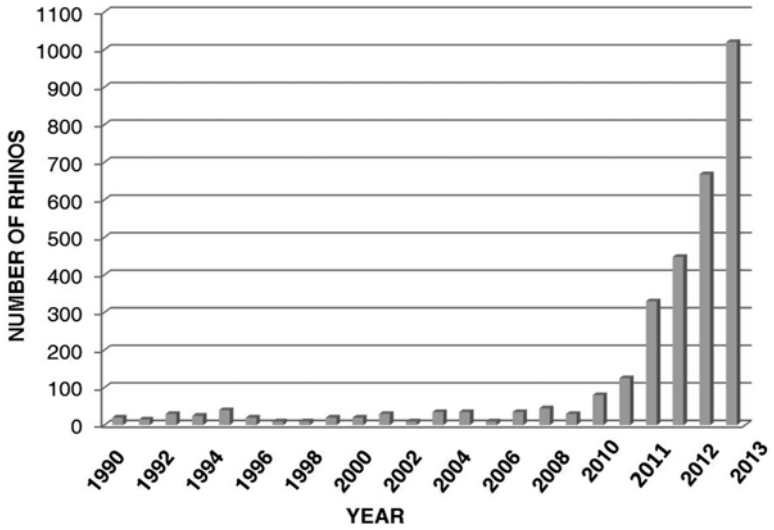

Fig. 6.3 The number of rhinoceros poached in South Africa between 1990 and 2013

virtual extinction of the East Asian rhinos, South Africa conserves 35 % of the world's black rhino and 93 % of the total white rhino population (South Africa Department of Environmental Affairs 2012). This places an enormous responsibility on South Africa to protect the species from poachers that cause their extinction. As shown in Fig. 6.3, poaching increased significantly over the past years. More specifically, from 2008 to 2012, annual poaching increased every year drastically, from 30 to 668 animals (see Fig. 6.3) and in 2013, 1,004 rhinos have been killed for their horns. If this rate of increase in the rhino poaching continues, they will become extinct within a decade. At this point in time, South Africa is failing to stop this trend. Just over half are lost in Kruger National Park to armed poachers entering through the porous border with Mozambique. The rest gets killed on smaller reserves and private game ranches.

In 1977, the Convention on International Trade in Endangered Species (CITES) listed the white rhino in their Appendix I document. The Appendix I document lists all species threatened with extinction. The listing led to a ban on all the international commercial trade of this mammal. Since 1994, the white rhino in South Africa was moved from the Appendix I document to the Appendix II document, which allowed the trade in live animals and trophy hunting. The legalization led to an increase in the amount of investments made in this new escalating market; however the trade in rhino horn was not included in South Africa's Appendix II, which painted the picture that the world rejects the quite obvious demand for rhino horn (Hall 2012). This did lead to a growing interest by game ranchers to have particularly white rhinoceros on their ranch for sustainable use through legal trophy hunting.

The fastest growth in rhino hunting clients was from Vietnam. Bearing in mind that Vietnam has no history of sport hunting and it is illegal to own a gun in Vietnam, it became clear that when 160 permits to legally hunt rhino and export the trophies were

issued in 2007, something was wrong (Child 2012). These were people that used this avenue to get hold of rhino horn. An immediate ban was placed on the issuing of legal hunting and trophy export permits to Vietnamese and within 1 year thereafter the poaching of rhino doubled and rapidly increased ever since as can be seen in Fig. 6.3. It is generally believed that the bulk of rhino horn poached goes to Vietnam. China banned the rhino horn trade in 1993 and it was removed from traditional medicine books in that country. In order to combat the trade to Vietnam, Deputy Environmental Affairs Minister Rejoice Mabudafhasi and Vietnamese Rural Development Deputy Ha Cong Tuan signed an agreement on the 6th of May 2013 to crack down on the illegal black market trade in rhino horn which at this time sold at USD 70,000 per kilogram. This is more than the price of gold. Under these circumstances, there is a declining interest by most game ranchers to own the species because of the dangers that are associated with the poaching of these animals. The prices of all rare and scarce wildlife species on the South African game auctions have increased over the past 4 years, except the price of white rhinoceros that has declined.

While rhino ranching is a controversial practice, this chapter argues that there are several benefits of rhino ranching.[10] First, legal trade in rhino horn will give the consumer the option of buying the product from a legal, ethical and controlled source. This will curtail the black market as the only source of the product and there will be no need for rhinos to be killed (legally or illegally) to provide the product. Rhinos will be worth more alive than dead, which is not the case today. Second, by breeding rhinos on game reserves, the decline in rhino numbers can be addressed. Legal trade will allow for the means to protect the rhino on these farms and reserves and new and emergent farmers will be encouraged to breed rhino. Third, the legalisation of rhino horn trade by CITES can certainly contribute to food security in needy African communities. At present, communities are turning to poaching as it is a lucrative prospect but communities can be taught and encouraged to breed rhino for regular horn sales. By ranching with rhinos, communities can improve their livelihood and thus put community-based natural resource management into practice. Fourth, legal trade in rhino horn will satisfy the needs of consumers by supplying a sustainable and ethical obtained product that contributes to biodiversity and habitat restoration, as well as preserving the rhino. Legal trade is an innovative and conservation-based solution to the rhino crisis. This is the true nature of wildlife conservation in southern Africa. Tiger bones, elephant tusks, shark fins and numerous other wildlife products require and represent the death of an animal whereas rhino horn does not. People who own rhino will never want to kill their rhino, even in hunts, as live rhinos will be worth more than dead rhinos. Finally, the life span of a rhino is about 40 years of which during 32 years the rhino horn can be harvested at a minimum of 1 kg per year. Therefore, 32 kg can be harvested from one animal in its lifetime at the present black market value of USD 70,000, making it worth in total USD 2,240,000.

The plight of the rhino today is comparable with the plight of the South American vicuña in the early 1960s. The vicuña was poached to virtual extinction for its very rare and valuable fur and all trade was outlawed by placing the species on CITES Appendix I. Some rural villagers were encouraged to protect the species and shave

[10] Pers. comm. with John Hume, the single largest owner of rhinos in the world.

the hair like one does with sheep. The product for which the animals were killed can be obtained easily without killing the animal. CITES then down-listed the species to Appendix II, protection was done by the villagers and the numbers of the species turned from the brink of extinction with less than 1,000 in the whole of South America by 1965, to over 400,000 today (Lichtenstein 2010). The very same can happen to the rhinoceros in Africa if ranching of the species can be done with sustainable sales of the horn. On a continent so often plagued by food shortages in rural communities, the rhino can become a way towards food security.

6.5 Conclusions

This chapter described the private game ranching industry in South Africa. It showed that the disappearance of hunting opportunities for local and foreign hunters was the main stimulus to own and protect wildlife with the view on sustainable use. State controlled conservation areas were indeed 'fortress conservation' and many South Africans embraced the opportunity to be more in touch with wildlife. The growth in private game reserves was greatly stimulated by market forces from the start and to lesser extent by sentiment and status symbol values. Yet, many challenges needed to be overcome in this nascent industry including fencing, capture methodology for wildlife relocation and disease and genetic management. A major milestone was in 1987 when authority to manage and sustainably utilize wildlife was devolved to the landholder level. In southern Africa most of these landholders are private individuals or companies. Drawing on the illustrative examples of lions and rhinos, the chapter argued that game ranching by the private sector can be an important means to conserve wildlife. Tribal owners of land should also be encouraged and led towards the more economical use of their wildlife resources on a sustainable basis as is the case in southern Africa. This will also offset the present unsustainable and large bush-meat markets in Africa that is based on illegal and unsustainable poaching.

Provided there is no political interference such as land claims by the government, this industry is set to grow more steadily. The institutional and supportive infrastructure for such growth is ready available. WRSA is the single largest organization serving the interests of the PGR community and many supportive sectors to the game ranching industry have emerged like the game capturing sector, wildlife veterinary services and game proof fencing suppliers. The ultimate outcome in terms of nature conservation is that 20 % of the country is now under conservation of which only 6.5 % is state conservation land. Over a 100,000 employment positions now exist on the game ranches alone and are mostly taken up by rural people. Accountability is ensured through membership of WRSA. On the down side of game ranching, too much focus is being placed at this time on the colour variants of species such as black impala, golden wildebeest and golden oryx, which are the result of recessive genes but artificially promoted because they attain superior prices at auctions and trophy hunters.

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