Caring for Wildlife in Southern Africa

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MVMA , Montana , January 2024

In the 1500's and 1600's Africa had a low human population and a high wildlife population. The value of wildlife to humans was only its food value. When the colonizers entered the continent they brought with them missionaries, guns and medicine. The missionaries preached peace and love and not to kill thy neighbor or neighboring tribe and together with better health care this resulted in enhanced human population growth. The availability of guns made it also easier to kill animals and so the wildlife populations as opposed to human populations started to decline.

1.African wildlife evaluation

Many African people moving from a subsistence lifestyle to a cash economy, have relatively few options for generating income. They can sell agricultural or pastoral produce, work for a cash wage in agriculture or industry, or sell retail goods in local or regional marketplaces. However, without access to capital, land or livestock, the harvest of wildlife resources offers a better return for labor input. Cash income from the sale of wildlife products can be highly variable, even when the same resource category is considered. The returns from hunting are generally higher than average local wages and although this meat is still important to many rural people, it is now also a major source of protein for many of tropical Africa's large numbers of town and city dwellers. 80% of the protein consumed by people in Central Africa is bushmeat. 6 million ton is harvested /annum in the Congo basin alone (*National Geographic, 06.2023)*

The inefficiency of hunting practices, often results in up to 80% of the catch ending up unsuited for human consumption due to decay.

Indiscriminate hunting by the colonists at first took a toll on wildlife. This has abated largely with independence of all former colonies during the period after 1950 and in its place came the professional hunters of whom many practiced wildlife management and sustainable use. Loss of habitat, particularly due to deforestation, and the production of charcoal, outside of formal protected areas, continue to negatively impact on wildlife populations.

Kenya abolished hunting in 1977. Since then, the wildlife numbers has declined with 70% in general and lions in particular, over 80%. In their neighboring country Tanzania, regulated sustainable use of wildlife by means of hunting was never abolished. Except for present day elephant poaching no significant decline in wildlife numbers has been reported over the same period.

2. Southern Africa

The southern African countries were the last to achieve independence and by then had established many functional national parks. Outside of these however, very little wildlife

remained as hunting was largely unregulated up to the middle of the 1900's. The value of wildlife at that time was vested in its value to attract tourism in public protected areas.

As was the case in many African states by 1960 wildlife numbers in South Africa was the lowest ever and could basically only be seen in reasonable numbers in the national parks and reserves and it was estimated that only about 500,000 wild animals occurred in the whole of the country, including public protected areas. Only about 600 white rhinoceros at that time occurred in the whole of South Africa and bontebok were estimated to be 19 and mountain zebra 90. 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. Some cattle ranchers started to fence wildlife in, protect them and sustainably made them available to these hunters. The *res nullius* status (belongs to no one) of wildlife changed forever. A new, albeit small initially, wildlife economic chain was born, and the number of game ranches grew within 50 years from zero to 11 800 covering 23million ha or 18% of the country surface.

In order to supply the new upcoming game ranchers, game auctions were introduced which resulted in spectacular increases in prices over the years. Wildlife veterinarians who in the past mainly worked in the public protected areas now started to contribute greatly in the private sector conservation. Health checks had to be done on wildlife that was sold on auctions and had to be relocated. By 1990 the focus fell on the rare and endangered species, like buffalo, sable antelope, and roan antelope and a steady, and at times steep growth in value was experienced. Wildlife became valuable and therefore the owners protected them and ensured that a wildlife veterinarian is on call if and when needed. By devolving the ownership of wildlife outside of official protected areas to private individuals, corporations and tribes, a pragmatic free enterprise wildlife conservation value chain led to the private ownership of 23 million head of wildlife in 2022 being 72% of all wildlife in the country.

Due to good veterinary care and management, we have today sable antelope trophies of well over 50 inch. These big bulls have been hunted out in the past and a 33 inch was not too long ago seen as a good trophy. A similar trend is seen with buffalo today.

Venison is not getting much attention because of the extraordinary high prices that are attained for wildlife species on auctions. South Africa has 23 times more wildlife in private ownership as compared to the 1 million head of deer in New Zealand. Yet they produce 50 times more venison than us. The value of South African venison is set to rise due to more consumers getting health conscious and steering away from feedlot beef due to the perception that it contains high fat as well as growth hormones and antibiotics linked to the emergence of "super bugs ".

The high prices for colour variants in antelopes and good breeding stock for large trophies has declined dramatically during the past three years. Like a pyramid/Ponzi scheme it was not sustainable in the long run because eventually it will be the trophy hunters that will determine the price they are prepared to pay for an animal. The initial high prices for ostriches in the USA experienced a similar dramatic fall when market demand saturation point was reached. Not only will the market grow to saturation, but trophy hunters are becoming less as well. One of the downsides in the frantic scramble to obtain high priced colour variants has led to small plots of

land now becoming game farms or intensive breeding units. To protect their valuable investment some of these landowners go to all extremes the keep predators out. Trap cages with live chickens in them as bait are put along special electrified fences to capture leopards, jackal, or anything else that might potentially be a threat to their investment. These animals are normally shot in the trap cage. In addition, the low electric lines shock and kill several other smaller species such as pangolin and aardvark.

The value chain that developed as a result of proper wildlife management and veterinary support by the private sector has led to the fact that we have more wildlife in the country now than what is known from recorded history. This unfortunately does not apply to the rhinoceros. The enormous financial strain on the private sector to protect rhino against the relentless onslaught of poaching currently is driving their value and numbers down. A regulated and legal trade in rhino horn via a Central Selling Organization such as in the diamond trade, will turn this trend around and provide the capital for enhanced security on game ranches. More entrepreneurs would enter rhino breeding because of the value added if regulated trade of horn out of South Africa was declared legal by CITES. This is the only way to increase the numbers of rhino and should be tried since all other measures has failed. The rhino horn trade is currently still the mandate of the criminals, poachers and smugglers and needs to change before it is too late.

Currently, poaching to supply persistent consumer demand for rhino horn remains a major problem. It has been responsible for a recent serious decline in white rhino numbers in South Africa's Kruger National Park, where no hunting is allowed. Numbers fell by 75% between 2011 and 2020.

In contrast, relatively few rhinos (under 100, making up less than 0.5% of the total population) are legally hunted each year. This happens on private reserves and the revenue finances the conservation operations. Unlike poaching, where valuable breeding females and calves are also killed, legal hunting is selective and mostly focused on specific males.

3. The Lion breeding controversy

Hunting of a lion is part of South Africa's policy of sustainable utilization of natural resources. It is contained in the *24th section* of the country's Constitution and is the only policy that can be practiced right now. This is consistent with South Africa's multilateral environmental agreements. South Africa is a full member of CITES and is still considering becoming a member of cic-wildlife.org .

Because of the great interest from trophy hunters to want to hunt a lion, the free roaming lion numbers outside of protected areas in Africa has declined alarmingly. Lions would have done well if there was not this urge to want to kill a lion. Lion breeding on private wildlife reserves started some 20 years ago and the organization SAPA (South African Predator Association) was formed.

Lion hunting in South Africa is a legal and well-regulated activity. It is subject to a permit being issued in terms of NEMBA and the provincial conservation legislation where it is required.

South Africa's national and provincial spheres of government plays a pivotal role in using the Ranch Lion industry as a management tool in promoting the growth of the hunting industry, which is valued at R6.2 billion per annum. This is a source of foreign exchange, especially with provinces, job creation and community development, especially of rural areas.

Lions are bred in captivity for various reasons, including but not limited to trophy hunting. Trophy hunting of lions does not pose a threat to the wild lion population. On the contrary, captive lion breeding and hunting could serve as a buffer to potential threats to wild lions.

The concept of 'canned lion hunting' has become, since the introduction of the TOPS Regulations, irrelevant and out of touch with reality because it is strictly prohibited. This refers to the shooting of a lion in a confined space. The SAPA regulations state clearly that a lion must be freed for more than a month on no less than 1000 ha with other wildlife and catch its own prey. The government would move against anyone who practices canned hunting. No litigation against incidents of canned lion hunting are on record since 2007 when the TOPS Regulations were promulgated. These regulations laid out the conditions under which lions can be hunted. SAPA's Norms and Standards for hunting Ranch Lions explicitly forbids all canned hunting activities and strives to promote a lion hunting ethics code as closely as possible to the *SCI's Code of Conduct for Sport Hunting in Africa*.

As with any legal activity, there are those illicit operators, which the government and SAPA is doing everything possible to stamp out. The legal hunters should not, however, be put into the same categories as unscrupulous actors.

The assertion that the export of lion bone would result in the extinction of African lion is, until now, unsubstantiated. In 2016, TRAFFIC released a report titled the *Bones of Contention*, which analyzed the risk associated with the trade in bones. They could find no evidence that South Africa's legal bone export was negatively impacting wild lion populations. The key threat to lions, according to the IUCN, is a loss of habitat, reduction in available prey and conflict with humans – factors to which the Ranch Lion industry make no contribution.

A final decision on the future of the Ranch Lion Industry requires very hard thinking. If South Africa closes down the lion breeding facilities and bans trade, there are more than 200 facilities and associated staff who would be negatively affected, including a large number of **veterinarians** specializing in the welfare of predators. In addition, thousands of lions will have no value and will have to be euthanized. The government will have to face damage claims of billions of Rand from ranch owners for the facilities and stock developed under government approval.

4. Elephant management

At the beginning of the 20th century the elephant population in Africa was estimated to be in the order of 3.5 million. At this point in 2022 little more than 10% is left and most of these are found in southern Africa and particularly in Botswana, Zimbabwe, Namibia and South Africa. Except for Namibia, all three other countries are battling with an over-population of elephants. In South

Africa as an example, there are 67 reserves that have elephants and every one of them have too many. This leaves these reserves with nowhere to relocate elephants within our borders.

If we focus on Kruger National Park, this park of 2.2 million hectares has been determined in the early 1960's to have a carrying capacity of

8 000 elephants in order not to have a negative influence on biodiversity. A program of harvesting elephants was introduced in 1964 and annual counts determined the offtake in order to maintain the numbers at 8000. The meat was cooked and canned and distributed to neighboring rural communities and staff. This was ongoing for 30 years until South Africa had a change in government in 1994. A year later government placed an embargo on the harvesting of elephants in the country. In the following 27 years the numbers grew from 8 000 to

31 000 resulting in a visible deteriorating of biodiversity, particularly plant communities.

This situation has led early-on to a variety of debates and research on methods to manage elephant population growth other than harvesting or culling.

Relocation within the country was initially successful, but now all the game farms that took elephants, already have too many.

Vasectomy: This is no easy task but can be done. The elephant testicles are located inside the body adjacent to the hind vertebral column. This requires a laparoscopic technique which in this case requires a whole team plus a helicopter out in the field. Because of the cost it is only effective in a small reserve with a small herd of elephant to be a viable option. On 2.2 million hectares with 31 000 elephants this isn't an option.

Immunocontraception: The Humane Society International/Africa has sponsored the treatment of African elephants using the immunocontraception vaccine as a humane population growth control method. This brings the total number of females under treatment in South Africa to more than 1,100 – which is more than half of all breeding-age female elephants outside of the Kruger National Park, which does not use contraception.

Immunocontraception uses the female elephant's own immune response to block egg fertilization. Female elephants over the age of 10 years are treated remotely from a helicopter with a dart that contains the immunocontraception vaccine PzP and a marking substance. The marking substance creates a quick reference of which animals have been darted. The dart falls out shortly afterwards. The animals do not need to be immobilized to be treated and vaccinations are completed within minutes.

This an effective way of population control in smaller reserves and needs to be topped-up every 18 months.

GnRH : Because of their size and reproductive anatomy, surgical castration is not a practical option in adult elephants. Lueders *et al (*2019) states: Similar to other species in human care, the effects of gonadectomy are desired in specific situations. This may be for contraceptive purposes, or for behavioral or veterinary management of elephants in human care or wild elephants managed in small reserves. Research into non-surgical contraceptive measures for wild

and domestic animals has resulted in an array of hormonal and immunological options to downregulate gonadal function. Driven by the production-animal industry, commercial gonadotrophin releasing hormone (GnRH) vaccines are readily and cheaply available. This immunocontraceptive is effective in both males and females as it inhibits gonadotrophic hormone release and, thus, downstream stimulation of testicles and ovaries. The GnRH vaccine offers a viable approach for various management purposes. It should be noted that the GnRH vaccine was not primarily designed as a reversible contraceptive. Therefore, its use must be well justified on an individual basis and the effects closely monitored.

Elephant export:

More than half of all the elephants in Africa today resides in only three southern African countries namely South Africa, Botswana, and Zimbabwe. Half of all the other African countries which had elephants, has no more.

Repopulating to those countries would be a perfect solution. Take from where there are too many, to where are no more, on condition they are protected. This has been done successfully to Mozambique and Angola.

5. Wildlife Diseases

Several more common diseases are found in wildlife populations such Foot-and-Mouth disease, Bovine TB , Anthrax, and Corridor disease, albeit seldom. The Kruger National Park veterinarian in the late 1960s and early 1970s, Dr. Eddie Young did pioneer 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 wildlife reserves 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.

Foot-and-Mouth-Disease is a condition that rarely manifests in wild ruminants. However, any cloven-hooved animal can carry the virus and serve as a source of infection for domestic livestock that do show clinical disease, resulting in significant loss of production. The economic

impact of this disease on the livestock agricultural industry is so severe that it is classified worldwide as a controlled disease. This means that any evidence of infection by FMD will result in immediate culling of infected animals and strict quarantine restrictions will be imposed in an infected area until proof of no infection can be provided. Wild ruminants, especially buffalo, carry a high risk of FMD transmission, and therefore all buffalo movements in South Africa are monitored using compulsory blood tests. It is very important to realize that uncontrolled relocations of wildlife and especially illegal relocations from infected zones in South Africa, i.e. Kruger National Park and northern KwaZulu-Natal and immediate surroundings, may result in an FMD outbreak, with serious and long-term economic impacts on all farmers.

Viral disease manifestation in wild ruminants is not common, but when it occurs it can have a significant impact on production or survival. Understanding the risks and how to manage these through management interventions like vaccination, hygiene, and sensible relocation, can go a long way in steering clear from encountering these diseases in a ranching enterprise.

Tuberculosis (TB) was originally a disease occurring in cattle and is still the major source of infection for other cattle. It has opportunistically entered Kruger National Park from Mozambique in the south of the Park in the late 1990's and has been found in African buffaloes at first. Kudus that wander out of Kruger Park can also play a role in the spread of TB to cattle in communal areas adjacent to the park. All infected species develop the disease.

Infection occurs when animals with the disease come into close contact with animals that do not have it. The disease can enter the body of an animal when the bacterium is breathed in, or taken in from contaminated grazing areas, get into contact with bruises or cuts on the skin or during mating. Infected animals may have TB bacteria in their urine, feces, discharges from the vagina and semen. The disease develops very slowly in the body of wildlife. The signs seen in live animals are coughing, difficulty in breathing, discharge from the nose and weight loss. Tests for TB include a skin test called the tuberculin or interferon test, or a blood test.

Anthrax is a highly contagious bacterial disease of domestic and wild animals and is an indigenous disease of wildlife, particularly in the Kruger National Park and also in other parts of Africa.

Animals usually die suddenly without any symptoms of illness. The Anthrax bacterium, *Bacillus anthraxis*, must kill its host in order to propagate itself and has no sex or age predilection. Anthrax seems to be a population regulatory mechanism. Most cases are found at the end of the winter dry season in August to September when grazing becomes poor, and the browsers have a limited leaf choice. As soon as the first rains fall the blow fly vector feces containing the bacteria, on l are washed off and not consumed anymore by browsers.

Corridor disease. East Coast fever (*Theileria parva* infection in cattle) was eradicated from South Africa in the mid-1900. However, another form named Corridor disease (CD), associated with *T. parva* carrier buffaloes exists and outbreaks have increased in endemic areas. The African buffalo (*Syncerus caffer*) is one of the most sought-after wildlife species for private

ownership in South Africa today, but the demand far exceeds the limited supply of animals suitable for relocation to most parts of the country. Buffalo in southern Africa are natural hosts of at least 5 species of *Theileria* , of which 4 are known also to infect cattle. The most pathogenic and economically important of these is *Theileria parva lawrencei,* which is transmitted by the brown ear tick *Rhipicephalus appendiculatus,* and Rhipicephalus zambeziensis. *T.parva* is the causative organism of the fatal disease referred to as East Coast fever (ECF) and Corridor disease in cattle. ECF (*Theileria parva parva* infection) was successfully eradicated in South Africa, but the vector ticks still occur widespread in most cattle-farming areas. *Theileria parva lawrencei* (the cause of Corridor diseases in cattle, which is practically indistinguishable from ECF) of which the African buffalo is the main reservoir host, is transmitted by the same tick species and is endemic in buffalo population in some parts of the country. Translocation of both infected and uninfected buffalo is strictly controlled to prevent the spread of Corridor disease and avoid a possible recrudescence of ECF by the selective transmission of subpopulations of *T.parva* (which might cause ECF) from buffalo to cattle.

I would like to focus on two unusual diseases being Pansteatitis in crocodiles and Tannin problems in browsers.

Pansteatitis: The Olifants River in the Kruger National Park has one of the largest Nile crocodile(*Crocodylus niloticus)* populations in Africa. In May to September 2008 massive crocodile mortalities (at least 160) in the Olifants River gorge area occurred. Postmortem examinations found yellow-orange hardened fat in their tails and base of the legs. This condition is known as pansteatitis.

It is normally a nutritionally mediated condition, associated with high-unsaturated fatty acid and low-vitamin E in the diet, causing depletion of the anti-oxidant system, leading to lipid peroxidation and deposition of ceroid pigment. Hardened fat is unavailable for metabolism, leading to extreme pain and reduced mobility. Impediment of swimming or hunting eventually leads to starvation or drowning.

Tannin poisoning: The presence of high concentrations of tannins in plant species is associated with indigestibility and unpalatability. Digestion is inhibited because the microbial enzymes which are responsible for leaf digestion by fermentation in the rumen-reticulum, bond with the condensed tannins. When this happens, the enzyme can no longer be effective (Van Hoven, 1984). Browsers normally evade plants with high condensed tannin levels. In confined ranches tannin levels in leaves can increase as a chemical defence against over utilization and lead to mortalities.

6. Rhinoceros conservation

While rhino ranching is a controversial practice, there are several benefits. 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 legalization 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.

7. 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 private game reserves (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 the owners and with professional wildlife managers and wildlife **veterinarians** often employed in formulating goals and executing such. The sources of funding are usually private funding and venture capital.

Contribution to conservation : It trebled conservation land in South Africa and made wildlife valuable thus worth the protection and management. There are about 11,600 private wildlife reserves in South Africa 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 and cared for, the better the profit. Side businesses also profit such as animal feed producers, helicopter service providers for game capture and game counts, **veterinarians**, taxidermists, wildlife transport contractors, abattoirs and ecotourism service providers.

8. The shortage of Veterinarians and Vet Techs in South Africa and the Ecolife Expeditions

The South African Veterinary Council (SAVC) wants veterinarians to be put on South Africa's critical skills list as the shortage of vets poses a threat to food security and animal vaccine administration.
The council said SA was facing a severe shortage of veterinarians with 60 to 70 vets per million citizens, which was below the international norm of 200 to 400 vets per million. This also effects veterinarians in wildlife conservation areas.
EcoLife Expeditions. We invite you to experience our country on a two-week program designed exclusively for professional veterinarians, veterinary technicians and veterinary nurses , and maybe you would want to come back one-day !
The purpose of this program is to provide an opportunity for practicing veterinarians to learn about, experience and participate in wildlife management and health interventions in free roaming wildlife populations in Africa. This also forms the basis of understanding the spread and management of wildlife diseases. An additional objective is to provide an opportunity to learn and experience in Africa a different side of veterinary science that can broaden one's outlook and support professional development. This EcoLife program 1015-22747 is approved by the AAVSB RACE to offer a total of 31.00 CE Credits (31.00 max) being available to any one veterinarian: and/or 31.00 Veterinary Technician CE Credits (31.00 max).
More information is available at :https://www.ecolife.co.za/profvet.html

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